GENERAL VIEW OF THE AGRICULTURE OF THE COUNTY OF CAMBRIDGE;...

William Gooch

1907

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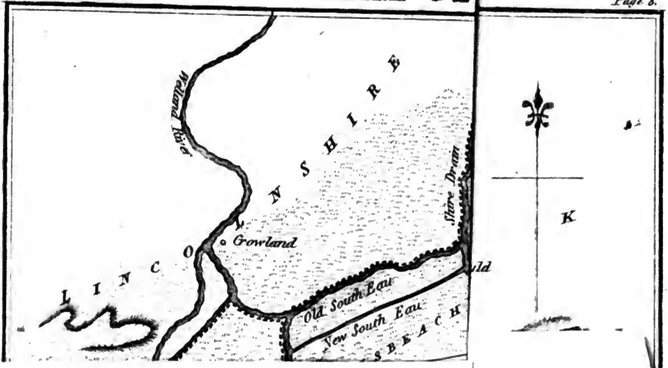

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GENERAL VIEW
OF THE
AGRICULTURE
OF THE
COUNTY OF CAMBRIDGE;

DRAWN UP FOR THE

CONSIDERATION OF THE BOARD OF AGRICULTURE

AND INTERNAL IMPROVEMENT.

BY THE REV. W. GOOCH, A.B.

"VITTORIO EMANUELE III" - BIBLIOTECA NAZIONALE
NAPOLI

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PREFACE.

SO multifarious is the information necessary for obtaining full and correct knowledge of the Agriculture of any district, and persons of sufficient zeal, disinterestedness, and patriotism, for full and unreserved communication are so rarely to be met with, that there is great difficulty in collecting materials for a work of this sort; I mean not however to ascribe the defects of the following pages to this cause, it would be an ill return for the most handsome reception, and the greatest attention in every part of the county. I found few instances of narrow-minded and groundless suspicion. I had no doubt but I had all the information the persons whom I saw had to communicate on the subjects they respectively were acquainted with; the defects, therefore, on those subjects are with myself only; but there are many particulars on which only few persons were prepared to give information, owing probably to those subjects not being generally thought worthy attention: a little reflection however, would convince any one they are; the particulars I allude to are objects of attention principally with those who farm, not only for profit but for amusement and for information; the farmer whose only object is the former, goes but little way into these particulars, he is perhaps timorous and diffident of his abilities, he adopts the practice of his neighbours, who are esteemed money-getting men, and takes it for granted he is on safe ground, not recollecting that he whom he takes as his guide may have been deceived by the same ideas, and though on the whole he may farm to profit, he may in particular branches be a loser. I had many instances of this in Cambridgeshire, perhaps none more striking than corn-grazing of bullocks; the accounts I had of losses from that practice are amazing, with barley at 9*s*. and 10*s*. per Co. price of lean beasts, 5s. to 6*s*. per stone, on what they would fat to, and price fat 9s. to

10*s*. per stone. To the question, "why this practice?" the answer was, "because others (good farmers) did it, and barley was low." "Did your beasts pay you that low price?" "No, not near it." Why not?" "Because they cost too much keeping." Now this cost might have been very nearly ascertained by previous calculation; but the experience of his money-getting neighbour was relied upon, and hundreds of coombs of barley returned not a farthing; instances of the like nature might be given on other subjects, such as the comparative profit between dairying and grazing, between sheep and bullocks on different systems, &c. &c. but farmers attentive to inquiries of this sort are not numerous in Cambridgeshire, owing perhaps to the want of a Bedford, a Coke, &c. &c. amongst them, and perhaps also to the want of an agricultural society, which, properly conducted, would stimulate to inquiry: for men would feel a pride in being able to communicate, when flattered by applications for information, nay they would be uncomfortable in not being able to give it.

In drawing up this Report, my aim has been that it should nearly as possible accord with its title, and the plan for its execution given by the Board; I found, however, that some information I had obtained, and the observations suggesting themselves could not with propriety be placed as prescribed by the Board; I have therefore placed such communications under titles suitable to them, in the Chapter of Miscellanies.

Conceiving that a great public benefit may be derived from communicating the practice of individuals of experience, ability, and celebrity, I have noted that of such gentlemen, and feeling it a tribute justly due, (and that reference may be made to them) I have given their names.

In a county so extensive, and possessing land so valuable, and of such various qualities, and occupiers of the description I have alluded to, it may be a subject of surprize to the reader, that this work contains accounts of so few experiments, (by experiments I mean any new practice, or any practice not generally known, and the result so satisfactorily ascertained as to determine absolutely their merit or demerit). I assure him it does of all such as I heard, and the reason given for their paucity is, that the state of great part of the county, (open-field) precludes the opportunity of making them, and in most of the districts, where enclosures have taken place, time enough has not yet elapsed to bring the lands into a state for the making any; indeed they are scarcely recovered from the effects of the old impoverishing system; no doubt, however, ere long this county will distinguish itself as others have lately done; it cannot be otherwise, having in it a Hardwicke, an Adeane, a Tharpe, a Mortlock, a Jennyns, &c. &c. the practice of these gentlemen, and of several others enabled by the late enclosures to act upon their own ideas, warrants this prediction; but partiality to the practice of their grand-fathers, is so deeply rooted in the minds of the generality of the farmers of the county, that they will not soon, nor easily be prevailed upon to depart from it; no less convincing argument will avail, than the proof that their new rents cannot be paid, but by a more lucrative system; that they cannot, might be easily shewn. Wheat, barley, fallow will not pay 25*s*. to 40*s*. per acre rent with the expenses of 1806, it is to be feared that the *best system* will not do it, in many districts where it is well known these rents exist.

Much of the arable husbandry of this county is so foreign to the present practice in the best cultivated countries, that I frequently could not refrain from making that observation, and expressing my surprise that the example of those countries had in so few instances been followed, but I found (except amongst some individuals) that great doubts were now entertained whether any better plan than their old one can be practised; much as this bigotry is to be lamented, and widely as it is spread, there is great reason to hope that the spirit, skill, and success of those who are happily free from this bane to improvement, will root it out. As graziers the Cambridgeshire farmers may justly pride themselves, and if they were to communicate their practice in this branch of Agriculture to their Norfolk neighbours, and receive in return from them a few arable lessons, mutual benefit might be derived.

With these observations I present the following to the Board, assuring its members that however defective it may be, it is the best my abilities and opportunities could produce.

W. G.

Whatfield-Parsonage,
Suffolk, 1807.

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AGRICULTURAL SURVEY

OF

CAMBRIDGE.

CHAP. I.

GEOGRAPHICAL STATE.

SECT. I.—SITUATION AND EXTENT.

CAMBRIDGESHIRE is situated north of London, (its nearest parish being about forty miles from it,) and its extent from N. to S. 40 miles from E to W. 25 miles: its circumference 130 miles, being bounded on the N. by Lincolnshire and Norfolk, on the S. by Hertfordshire and Essex; on the E. by Suffolk and Norfolk; on the W. by Bedfordshire, Huntingdonshire, and Northamptonshire; it contains 686 square miles, and (as Mr. Vancouver reported to the Board of Agriculture, in 1794) 443,300 acres, which he describes and values thus;

	Acres.	Rent		Total Rental.		
		s.	d.	£.	s.	d.
Enclosed Arable	15,000	18	0	13,500	0	0
Open Field Arable	132,000	10	0	66,000	0	0
Improved Pasture	52,000	20	0	60,666	10	4
Inferior Pasture	19,800	10	0	10,642	10	0
Wood-Land	1,000	13	0	750	0	0
Improved Fen	50,000	15	0	37,500	0	0
Waste and Unimproved Fen	150,000	4	0	30,000	0	0
Half-Yearly Meadow-land	2,000	12	0	1,250	0	0
Highland-Common	5,700	10	0	3,750	0	0
Fen or Moor-Common	8,000	3	0	1,200	0	0
Sheep-Walk Heath	6,000	2	6	570	0	0
	443,300			22,609	0	4

The open-field arable, waste and unimproved fen, half-yearly-meadow, highland-common, fen or moor-common, and sheep-walk heath, are much lessened now (1806), full 43,000 acres of the open-field arable, being now enclosed arable and pasture; and great part (supposed about 20,000 acres) of the waste and unimproved fen, half-yearly meadow, highland-common, fen or moor-common, sheep-walk heath, being now become also enclosed arable and pasture, and the total rental increased, in open field more than double, and on the other lands three times at least (in the opinion of most persons) that of the former rents and value.

SECT. II.—DIVISIONS.

The county contains seventeen hundreds (including the Isle of Ely), one city, one sea-port, nine market-towns, one-hundred and fifty-seven parishes, and as every one knows, an university.

SECT. III.—CLIMATE.

Cambridgeshire lies between 52° 3′ and 52° 40′ N.L. and between 0° 25′ E. and 0° 10′ W. L. The following meteorological table, I was furnished with from the public library, Cambridge.

Metereological Journal for the Year 1805.

1805. Jany.	Deg.	Weather.
1	31.7	Frosty
2	38.50	Rain
3	36	Cloudy
4	37	Fine
5	38.50	Do.
6	41	Foggy
7	45	Rain
8	41	Fine
9	34	Foggy
10	25.50	Frosty
11	34	Hazy
12	33	Foggy
13	40.50	Do.
14	40	Fine
15	37	Rain
16	44	Cloudy
17	44	Fine
18	37.50	Do.
19	37	Do.
20	40	Rain
21	38.50	Cloudy
22	35.50	Do.
23	34	Snow
24	32	Frosty
25	36	Hazy
26	30	Frosty
27	31	Frosty
28	30	Do.
29	35	Fine
30	36	Snow
31	34	Do.
Feb.		
1	32	Frosty
2	34	Fine
3	30.50	Rain
4	39.50	Do.
5	41.50	Do.
6	35	Fine
7	38	Cloudy
8	45	Fine
9	51	Do.
10	49	Rain
11	42.50	Cloudy
12	40	Do.
13	39	Do.
14	42	Fine
15	39	Cloudy
16	40	Do.
17	38	Fine
18	37.50	Cloudy
19	39	Fine
20	41	Fine
21	47	Foggy
22	47.50	Fine
23	48	Do.
24	40	Rain
25	48.50	Fine
26	49	Do.
27	48	Cloudy
28	48	Fine
Mar.		
1	43.50	Stormy
2	45.50	Cloudy
3	46	Fine
4	54	Do.
5	52	Do.
6	50	Cloudy
7	45	Do.
8	44	Fine
9	37	Cloudy
10	38	Do.
11	44	Fine
12	62.75	Do.
13	61	Do.
14	52.50	Cloudy
15	50	Do.
16	54	Fine
17	57	Do.
18	46	Rain
19	51	Fine
20	47	Rain
21	50	Cloudy
22	45	Fine
23	50	Do.
24	49	Do.
25	4750	Do.
26	49	Do.
27	45	Cloudy
28	41	Fine
29	40	Rain
30	53	Do.
31	55	Cloudy
April		
1	55	Cloudy
2	57	Fine
3	54	Cloudy
4	45	Rain
5	46	Cloudy
6	45	Do.
7	50	Fine
8	51	Do.
9	55	Do.
10	58	Fine
11	59	Do.
12	59.50	Do.
13	61	Do.
14	60.50	Do.
15	49.50	Cloudy
16	46	Do.
17	49	Do.
18	53	Fine
19	55	Do.
20	59	Do.
21	59 50	Do.
22	55	Do.
23	50	Cloudy
24	50	Do.
25	53	Fine
26	53	Rain
27	50	Cloudy
28	48	Fine
29	36.50	Snow
30	48.50	Fine
May		
1	51	Cloudy
2	49	Fine
3	52	Cloudy
4	54	Fine
5	54	Fine
6	60	Do.
7	57	Cloudy
8	46	Rain
9	49	Stormy
10	53.50	Cloudy
11	51	Fine

1805. May,	Deg.	Weather	1805. June.	Deg.	Weather.	1805. Aug	Deg.	Weather.
12	54	Stormy	26	63	Cloudy	9	73	Cloudy
13	56	Cloudy	27	64	Rain	10	73	Do.
14	55	Do.	28	67	Fine	11	73	Fine
15	51	Rain	29	62	Do.	12	76	Do.
16	59	Fine	30	65	Do.	13	70	Do.
17	58	Cloudy	July			14	66	Do.
18	57	Do.	1	68	Fine	15	66	Do.
19	59	Do.	2	65	Cloudy	16	68	Fine
20	60	Fine	3	66	Do.	17	68	Do.
21	62	Cloudy	4	75	Do.	18	68	Rain
22	58	Do.	5	66	Do.	19	68	Cloudy
23	49	Fine	6	63	Rain	20	64	Do.
24	57	Do.	7	66	Do.	21	62	Do.
25	60.50	Do.	8	60	Do.	22	64	Do.
26	61	Do.	9	65.50	Fine	23	68	Fine
27	64	Do.	10	70	Do.	24	71	Do.
28	63	Do.	11	59	Rain	25	70	Do.
29	66	Do.	12	66	Fine	26	69	Cloudy
30	65	Do.	13	66	Do.	27	70	Fine
31	58	Cloudy	14	66.50	Do.	28	69	Cloudy
June			15	61.75	Cloudy	29	71	Fine
1	54	Fine	16	64.50	Fine	30	73	Do.
2	57	Do.	17	61	Cloudy	31	71	Cloudy
3	62	Do.	18	63.50	Fine	Sept		
4	53	Cloudy	19	65	Do.	1	71	Fine
5	53	Do.	20	73	Do.	2	66	Cloudy
6	61.50	Do.	21	72	Do.	3	66	Do.
7	66	Fine	22	67	Cloudy	4	69	Do.
8	66	Do.	23	70	Fine	5	72	Fine
9	70	Cloudy	24	64	Cloudy	6	69	Do.
10	64	Rain	25	65	Fine	7	66	Cloudy
11	65	Cloudy	26	70	Do.	8	65	Rain
12	61	Fine	27	72	Cloudy	9	67	Fine
13	64	Cloudy	28	68	Do.	10	69	Fine
14	58	Rain	29	70	Fine	11	71	Do.
15	58	Cloudy	30	70	Do.	12	66	Cloudy
16	60	Do.	31	69	Do.	13	68	Fine
17	64	Fine	Aug.			14	69	Do.
18	60	Showery	1	69	Cloudy	15	71	Do.
19	57	Rain	2	70	Do.	16	73	Do.
20	55	Cloudy	3	67	Fine	17	70	Do.
21	55	Do.	4	71	Cloudy	18	75	Do.
22	60	Do.	5	70	Fine	19	70	Cloudy
23	64	Fine	6	70	Do.	20	65	Do.
24	70	Do.	7	68	Do.	21	64	Fine
25	59	Rain	8	70	Do.	22	59	Cloudy

1805. Sept.	Deg.	Weather	1805. Oct.	Deg.	Weather,	1805. Nov.	Deg	Weather.
23	60	Fine	27	48	Rain	30	52	Fine
24	56	Cloudy	28	45	Fine	Dec.		
25	60	Fine	29	45	Cloudy	1	45	Cloudy
26	60	Rain	30	44	Stormy	2	37	Fine
27	61	Cloudy	31	45	Fine	3	41	Rain
28	62	Fine	Nov.			4	50	Cloudy
29	61	Do.	1	42	Clear	5	45	Fine
30	60	Cloudy	2	46	Fine	6	49	Cloudy
Oct.			3	45	Do.	7	49	Rain
1	58	Cloudy	4	46	Do.	8	44	Fine
2	63	Fine	5	44	Do.	9	43	Rain
3	60	Do.	6	43	Foggy	10	37	Fine
4	60	Do.	7	45	Cloudy	11	36	Do.
5	62	Fine	8	42	Foggy	12	35	Snow
6	58	Cloudy	9	47	Fine	13	27	Frosty
7	58	Fine	10	42	Foggy	14	34	Snow
8	60	Cloudy	11	43	Cloudy	15	35	Do.
9	58	Do.	12	42	Rain	16	31	Frosty
10	52	Fine	13	45	Cloudy	17	28	Do.
11	50	Cloudy	14	45	Fine	18	37	Fine
12	50	Fine	15	45	Cloudy	19	39	Cloudy
13	52	Rain	16	46	Fine	20	48	Rain
14	53	Fine	17	42	Do.	21	50	Do.
15	53	Do.	18	39	Do.	22	42	Fine
16	51	Cloudy	19	40	Do.	23	43	Do.
17	48	Rain	20	42	Do.	24	38	Do.
18	49	Fine	21	38	Do.	25	38	Rain
19	50	Do.	22	46	Do.	26	46	Do.
20	50	Do.	23	40	Do.	27	40	Cloudy
21	52	Cloudy	24	44	Cloudy	28	38	Rain
22	50	Fine	25	46	Fine	29	49	Fine
23	53	Do.	26	46	Cloudy	30	50	Cloudy
24	52	Cloudy	27	43	Cloudy	31	53	Rain
25	57	Do.	28	43	Foggy			
26	52	Do.	29	51	Cloudy			

The inhabitants of the Fens are most unhealthy in the season when the Fens are driest, noxious effects being immediately felt, from the soil usually under water, being exposed to the atmosphere. Mr. Scott of Chatteris observes, " the country of late years has been much more healthy than formerly ; few natives are now troubled with the ague, say for the last ten years, resulting probably from the greater power and number of mills." "Strangers coming to reside, are still liable to it."

SECT. IV.—SOIL.

MR. Vancouver has so fully and so ably, in the opinion of all whom I consulted, written on this subject, that it would savour of invidious affectation to give any other than his account of the soil of this country. It may indeed be thought by indifferent persons too minute for a work of this sort, but by those in any way interested in the landed property of the county, it will not be objected to on that account. Mr. V.'s route was from Ashley, taking the parishes in the order in which they here follow.

Ashley including Silvery.—"The arable-land included within these bounds lies in thirteen open fields, that part of which binding east upon the village, is a dry, thin-stapled chalky soil; on the north, a wet heavy clay, with a mixture of some gravel, well stapled upon a gravel and chalk; on the west, a tender clay or loam, well stapled upon a clay, on the south, a stiff, heavy, wet clay, upon a gault; to the eastward of which the soil gradually opens, and forms a good mixture of a fair staple upon a clay, but which is finally lost in the thin chalky soil first mentioned."

Chevely.—"The arable land in this parish lies chiefly in open fields, the soils of which may be divided into three distinct classes; about two fifths, a stiff heavy clay, of a good staple, upon a gault; a like proportion of it, is a mixed soil of clay and gravel, of a tolerable staple, upon a gravel, a gravel, the remainder, about one-fifth, is of a dry thin staple, upon a chalk or gravel."

Catlidge.—" The soil of the common open fields in this parish, consists of a close, cold, and compact clay, laying upon a very retentive yellow clay, and blueish coloured gault."

Wood-Ditton.—" The land extending towards Newmarket consists of a thin, dry, white soil, upon a chalk, and a light sandy soil abounding with flints, upon a gravel. The land lying towards Cheveley, Catlidge, and Stetchworth consists of a strong heavy soil, upon a white and blue clay or gault."

Stetchworth.—" The open field arable land lying north of this village adjoining thereto, and bounded by the Devil's Ditch on the east, and the lands of Dullingham on the west, consists in part of a brown loam of a light staple, lying upon a thin stratum of chalk, under which is a close, compact, and white clay; the next in point of quality, is of a light coloured chalky dry nature, thinly stapled and lying upon a chalk; that of the third quality and binding upon the heath, is of a light, sharp, red, sandy nature, of a deep staple, lying also upon a chalk."

Dullingham.—The arable land in this parish is to be described under four distinct heads, that of the first quality, a heavy whitish clayey soil of a good staple, laying upon a clay; the second, that of a reddish coloured brick earth, of a firm deep staple, upon a stiff brown clay; the third of a brown mixed soil, of a very good staple upon a gravel, part of which is moist; the fourth is a dry thin, white, chalky land, adjoining the heath. The soil of the enclosures is a black tender mould, upon a clay."

Burrough-Green.—" The enclosed lands in the way from Dullingham are wet and rough, near the village a tender hazel-coloured loam, with a small mixture of sand."

Brinkley.—"The warm, tender, loamy soil, continues down the field, and across the brook."

Carlton.—"The surface here is of a lighter colour, than in the preceding villages, and strengthens upon the hill to a whitish compact clay; which prevails through the parish of

Weston Coville, becoming however still lighter until it terminates in a thin, dry, chalky soil, binding upon Newmarket Heath."

Snailwell.—The arable-land lies in three open fields; south by east of the village; and towards the turnpike road leading from Thetford to Newmarket, the soil is of two distinct sorts, that of the first quality, a loamy or tender clay, of a good staple, lying upon a chalk, the remainder is of a light sandy nature, well stapled."

Landwade.—"Some coarse pastures, and a deep rich white loamy soil, and indications of a good strong soil."

Fordham.—"The soil of the open arable field, next Chippenham, and adjoining to Snailwell Fen, is of a thin, gravelly nature, lying upon a gravel,thence towards Brackland fen, a white, thinly stapled, dry soil, upon a firm chalk or clunch, and thence binding upon Brackland Fen, a strong, greasy, white, deep soil, upon a clunch. On the east of the fen, a wet, heavy, cling clay, upon a deep, rich, blue gault, which burns into an excellent brick. On the south of the fen, a deep black sand, thence extending southwardly, the soil gradually changes to a lighter colour upon a gravel, thence the staple improves in strength and quality, forming a compact, deep, white earth; upon a clunch, ascending the hill, the soil becomes lighter, but continuing on the level towards Islesham, the soil is the same; west of this field, is a common of a moory nature lying upon a clay and gravel. On the west of this common, is a wet, brown, sandy soil; ascending the hill, the soil becomes more dry, and thence on the east side of the Soam-road, it improves in strength, and is of a darker colour; south of this and binding thereon, is another common, the soil a moor, lying upon a clay; south of the village is a deep white loam, lying upon a chalk and clay, extending to Landwade hedge, thence south east, a dry, poorer, and mixed soil. The enclosures in severalty, in and near the village, partake of nearly the same variety of soil as the arable."

Kennett.—"The soil here in general, is of a light, gravelly, and dry chalky nature, under which in many places is found a very fair marl, which has been applied in the proportion of about three thousand bushels per acre with very good effect* upon the gravelly soils."

Chippenham.—"The soil of this parish may be described under three distinct heads. The first quality, a deep white loam lying upon a chalk; the second, a mixed soil of a dry and rather thin staple, upon a chalk and gravel; and the third, a light driving sand, upon which in many places is found a dry tender chalk, which has been recently tried as a manure†."

Islesham.—The arable land here lies in four distinct open common fields; on the south side of the village, a whitish tender clay, or loam of a fair staple, lying upon a chalk or clunch."

Burwell.—"On the west and south west of the village, and adjoining thereto, is a deep,* rich, white loam, lying upon a chalk; thence extending southwardly the staple becomes more shallow, and ends in a thin gravelly soil, upon a gravel.† On the north of the village, a dark coloured strong brown mould of an excellent staple upon a clunch."

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* I was told, with "no effect."

† Under the fen-peat surface in this parish is a very fine white marl, this Mr. Thorpe has spread on the land and found it a very great improvement, twenty loads an acre, sufficient. A.Y. Annals, v. 4.

Swaffham.—" Soil similar to Burwell and Bottisham."

Bottisham.—" On the east of the village, a white tender clay or loam, of a fair staple; eastwardly and towards the heath, the staple becomes more thin, and is lost in a dry chalk, and reddish coloured gravel; on the north, a gravelly soil of a middling staple, upon a gravel and sand; on the south, a moist gravelly soil lying near the springs, upon a chalky marl."

Wilbraham-Magna.—" Soil varies considerably, the arable is all of a light nature, general substratum of chalk."

Wilbraham-Parva.—" On the north and east, and to the westward of the village, the arable land is of a red sandy nature, lying upon a gravel; on the south east, a whitish tender clay or loam of a good staple upon a chalk; on the south and westwardly, a deep brown mould upon a gravel."

Stow cum Quy.—" On the south of the village, is a tender, easy working loam, of a good staple lying upon a gravel; on the north, a strong cold clay, a light loam, and a fen or rather a morass."

Horningsey.—" Soil here is intermixed, being a thin gravel, and a loam or tender clay of a good staple."

Fenny-Ditton.—" A white strong loam or clay of a good staple, lying upon a chalk-quarry, or clunch; and a strong gravelly mould of a good substance, upon a reddish-coloured clay or brick-earth."

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* Not deep. This is the soil usually called in the county " white land."

† This soil is called " red land."

Baversham.—" Adjoining the village, a tough wet clay, lying upon a gault; westwardly, a strong brown mould, lying upon a reddish coloured brick-earth; south-westwardly, a white chalky soil; north-westwardly, a sandy loam."

Fulburn.—" A thin, light, chalky soil, some part of which is a strong deep staple;" there are indications of a warm and kindly soil. The upper part of the common towards Wilbraham, is of a light and sandy nature."

Cherryhinton.—" Soil similar to Fulburn and Barnwell."

Barnwell.—" A gravelly loam of a fair staple lying upon a gravel next to Cherryhinton Moor, and along Brick-kiln Furlong, soil of a close clingy nature upon a clay. Coldham-common is upon a bed of rich marl."

Trumpington.—" Adjoining river Cam. Soil of a black moory nature, on the north of the village a black friable mould, of a deep staple, lying upon and mixed with some gravel. The middle of the field, a strong loamy well stapled soil; adjoining the village a red gravelly soil; on the east of the village a similar soil; beyond the moor towards Cherryhinton, a strong brown earth, of a good staple, lying upon a clay. South of the village and adjoining thereto, soil of a light gravelly nature; southwardly the soil improves in its texture, and forms a tender clay or loam, of a good staple upon a chalk; thence skirting upon the river the soil becomes more tough and clingy, and is found to lie upon a gault. The enclosures lying in and adjoining to the village, are of a hot, gravelly nature. The common or moor is of a fenny nature from four to nine inches deep, lying upon a gravel."*

Stapleford.—" On the east of the village and adjoining thereto, a thinly stapled red soil, lying upon a gravel. North-west of the village, and adjoining thereto, a deep, strong, good wheat soil upon a chalk; thence in the same direction the strength and staple of the soil decreases, and ends in a thin dry chalk, or hurrock. South-east of the village, soil similar to that on east, but stronger and better stapled. North and north-east of the village, a thin, dry, chalky soil, similar to that on the north-west."

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* Trumpington, " soil a light loam." (A. Y. Annals, v. 4.)

Babraham.—" The enclosures, a light gentle soil, of a tolerable staple, and lying chiefly upon a gravel. The open fields, soil of a thin dry nature, lying upon a chalk and gravel."

Little Abbington.—" On the east side of Bournbridge, soil a tough clay, upon a reddish coloured brick-earth; thence towards the heath, the staple is lost in a thin dry chalk and gravelly soil; north eastwardly of Bournbridge a similar soil."

Hildersham.—" Towards great Abbington, soil of a light gravelly nature, lying upon a gravel; towards Balsham, upon a chalk; towards Linton, soil of a stiff clayey nature; towards Hildersham Wood, soil improves in its strength and staple."

Linton and Barlow.—" Soil a chalk, gravel and clay."

Shudy-Camps.—" The enclosed arable, a deep, strong, brown loam, lying upon a blue and whitish-coloured clay; the enclosed pastures, are similar; the open fields, a stiff clay, gradually lost in a light, dry, thin soil, upon a chalk and gravel."

Castle-Camps.—" The enclosures, a wet, but tender clay, lying upon a strong blue and yellow clay or loam; the open arable field similar to Shudy-Camps."

West-Wickham.—" Soil more light and loamy."

Balsham.—" The arable land chiefly a dry, thick, light soil, upon a chalk and gravel."

Sawston.—"The arable land northwardly of the village, is of a good staple, but of a light and gentle nature, and lying generally upon a chalk and gravel. The common is of a moory nature."

Pampisford.—"The arable land is of a light thin staple, upon a chalk and gravel. The two enter-commons are of a more gravelly nature."

Hinkeston.—"South of the village and adjoining the enclosures, the soil of the open field is of good depth and substance, lying upon a gravelly clay; thence towards Saffron Walden gradually loses its staple, becomes dry and hungry, and is found to lie very near the chalk and gravel; north of the village, and adjoining thereto, the soil is of a very fair staple, thence extending northwardly and towards Sawston, the soil becomes lighter, and rests upon a dry gravel."

Ickleton.—"Fields adjoining the enclosures, are a reddish coloured earth, of a fair staple, lying upon a gravel; thence westwardly and ascending the hill, a vein of cold, close clayey land, rather flat; beyond this in the same direction, the wet heavy land is gradually lost in a thin, dry, white soil, upon a chalk or hurrock."

Foulmire.—"Northwardly of the village, and towards Sheperheath, is a tender brown clay of a good staple, upon a soft, wet, reddish-coloured brick-earth, except the part binding upon Foxton, which is of a thinner staple, and lies upon a gravel. Southward, the soil next the moor, is of a clayey nature, and well stapled, thence the staple decreases, and towards Heydon (in Essex) it terminates in a thin, dry gravel."

Triplow.—"A warm, gentle soil, of a fair staple. The common, east of the village, is a loose, spungy, black soil, abounding in springs."

Buxford.—"Adjoining the enclosures on the S. W.

side of the village is a gravelly loam well stapled; continuing this course, the soil decreases and terminates in a thin, dry, white soil, upon a chalk or hurrock;" westwardly of this the soil again improves in strength and staple, and on the top of the hill, forms a strong brown, wet earth, upon a clay, in which there is a mixture of some large stones and gravel, this again gradually fades away, till on the extreme western boundary of the field, it ends in a thin, white soil, upon a hurrock. The soil of the middle field agrees with the above, except that it does not contain any wet heavy land. The moor field adjoining north-westwardly upon the enclosures, is of a deep and kindly nature, beyond which the staple fleetens, and is lost, in a hot, dry, burning gravel, which continues to the end of the field."

Whittlesford or Bedford.—" The arable land is of a light, gravelly nature, well stapled, upon a gravel and reddish-coloured brick-earth."

Newton, Haukston, and Harston.—" Similar to Duxford and Whittlesford."

Foxton. Indications of " a warm and gentle soil in the enclosures; on the north side of the village, very good turnip land; on the south, a tender, well stapled, white loam, lying upon a chalk; thence ascending the hill, the soil loses its strength and staple, but descending towards Foulmire and Triplow, the staple increases till the chalky land is lost in a brown gravelly loam, lying upon a loam."

Sheperheath.—" East of the village towards Triplow and Foulmire, is a light earth lying upon a chalk and gravel; a small portion in this direction and adjoining the enclosures, is a deep, rich, black loam, upon a chalk. West of the village, a tender gravelly clay, of a good staple, upon a clay, mixed with gravel: on the north of the village, and towards Foxton, the soil is of a gravelly nature, a small part lying upon a clay. The field called "Home Lands," towards Melbourne, is a white tender clay or loam of a good staple, upon a chalk. The enclosures are of a fair staple, upon a clay and gravel. The common field towards Foulmire, is of a dry, gravelly, and moory nature."

Meldrith.—"On the north of the village, and towards Watton, very good turnip land; about the village and towards Melbourne, a strong black earth."

Melbourne.—"Land of a generous kindly nature; about the villages, adjoining the enclosures, on the south side, is a tender well stapled, strong, white loam, lying upon a chalk; this falls off towards Foulmire, and ends in a cold, wet, hungry soil."*

Bassingbourn, including the Hamlet of Kneesworth.—"North west, west, and south west of the village, is a strong, brown, clayey soil, of a good staple. North-east, east, and south-east of the village, is a brown, deep, loamy soil, lying upon a gravel; thence in the same direction, beyond the line of Robin Hood's Tree, and extending towards Royston and Litlington, a thin, dry, white soil, upon a chalk or hurrock. The enclosed pastures are an open, brown, gravelly soil, of a good staple."

Litlington.—"Northward of the parish and adjoining thereto, is a gravelly soil, of a tolerable staple, but thence westwardly and towards Royston, a thin, dry, white soil, upon a chalk or hurrock. The other lands are similar."

Abbington.—"Soil of a white, clayey nature, of a good staple; upon a woodland, or yellowish-coloured clay."

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* "About Melbourne, the land is all chalk, the surface being chalky, on a hard rock, that breaks into cubes and oblongs." (A. Y. Annals, v. 4.)

Guilden-Morden, including the Hamlet of Odissey.—"East of the village, and adjoining the enclosures, strong, wet, clayey land, lying upon a gault; on the north, a brown strong mould, of a fair staple, upon a brick-earth, in which there is a mixture of loose gravel; west of this, is a well stapled black mould, upon a chalky marl, but of a soft and soapy nature; on the west of the village, the lower part of the field answers to the gaulty land first described; southwardly and adjoining the village, a black earth of a good staple, upon a gravel; thence southwardly a brown mould, of a fair staple, upon a hurrock; thence extending to and binding upon the enclosures of Odissey, a dry, thin, white soil, upon a chalk; Odissey is a thin, chalky soil. The meadow or lammas-ground, is of a low moory nature. The low common is of a cold, gaulty, gravelly nature."

Steeple Morden.—"North of the village, taking the church for the centre, is a stiff clayey soil, lying very flat upon a bed of blue clay or gault; about a third of this field inclines to a gravel, but still lying very flat and difficult to drain. South of the village, the soil is of a thin, dry nature, upon a chalk and gravel. The enclosures are of a good staple, upon a blue and yellowish coloured clay, and veins of gravel."

Shingay.—"A strong brown earth, lying upon a gravel, and a stiff wet clay, of a thin staple upon a gault."

Fadlow.—"East of the church and upon the hill, the soil is a wet, strong loam, of a fair staple, lying upon a yellow clay; on the north, a similar soil; on the south the land is of a superior quality."

Hatley, St. George.—"On the east of the village, (taking the church for the centre) the soil is of a thin, cold, clayey nature, lying upon a gault; on the south, a well stapled, black mould, upon a clay; on the west, soil similar to that on the east of the village as are about one hundred acres on the north of it; thence north-eastwardly the soil improves into a deep strong black mould."

Croydon.—"Soil of a strong, brown, loamy nature."

Wyndee.—"Rich pastures, the soil a deep brown loam, lying upon a gault and gravel."

Orwell.Whaddon.—"A strong, dark, friable mould, which in a direction towards Wimpole-Park Gate gradually changes to a reddish colour."

Arrington.—"The soil east and south of the village is of a cold and clayey nature, lying upon a strong, close, and compact gault; west of the village the soil runs of a fair staple, upon a chalk and hurrock; and northwardly it is of a fair staple upon a hurrock, and yellow clay; towards Kneeswell a well mixed soil land."

Wimpole.—"Soil a light coloured mould free from stones, about the depth of four inches, lying upon a strong clay or gault; it is in general very wet."

Barrington.—"The arable land lying north-east of the village consists of a hurrocky, dry soil; north-west is a strong brown earth, of a good staple upon a retentive clay, or reddish-coloured brick earth; the lower part of the field is a well stapled clay or loam; lying upon a bed of chalky marl, of a soft and soapy nature; the middle field is of a similar soil; as is the west field: the enclosed pastures lie in and near the village, and are of a similar soil to the lower part of the field."

Harlton and Haslingfield.—"Similar soil to"*

Eversden.—"The soil binding upon the brook is a well stapled loamy gravel; adjoining and approaching the village, the soil is of a thin, cold, clayey nature, lying upon a gault, the remainder of this field towards Kingston, is of a thin, dry staple, upon a chalk. The soil west of the village (taking the church for the centre), is a thin, cold, brown clay, in which there is a mixture of small chalk stones. The lower part of the church-field, on the east of the village, consists of a strong, deep, white earth, of a marly and yellow nature upon a chalk; beyond this towards Orswell, the deep, white loam is lost, in a cold, brown, tough, thin clay, upon a gault."

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* M. Hauxton Mills (adjoining these parishes) "is the first place where chalk is to be seen, it lasts from hence, quite across the kingdom." A. Y. Ans. v. 4.

Comberton.—" Soil similar to Barton."

Carton.—" The soil binding east upon the village, is a well stapled loamy gravel, upon a gravel; thence eastwardly and ascending the hill, tough, cold, thin clay upon a gault; north of the village, and adjoining the enclosures, is a white tender clay or loam of a good staple, upon a clay and gravel; thence northwardly the staple shallows into a thin, cold clay upon a gault: west of the village, about one hundred acres of warm, gravelly land, thence south and westwardly, is a thin, tough, cold clay upon a gault."

Grantchester.—" South of village, deep, black, friable mould, lying upon a clay; westwardly from hence about sixty acres of thin, cold, wet clay-land upon a gault; thence and composing the middle of the field about one hundred and forty acres of a well mixed soil upon a clay and gravel; north-west of the village and adjoining the enclosures, are about one hundred acres of a deep gravelly loam, upon a clay; thence in the same direction ascending the hill, are two hundred acres of cold, clayey land, upon a gault; north-east of the village and adjoining the meadows are about one hundred acres of deep rich loam, lying upon a clay; binding thereon and towards the north from the village, are about two hundred acres of a cold, clayey nature, upon a gault; north-west from Grantchester are about one hundred acres more of a well stapled mixed soil upon a clay and gravel."

Coton.—" To the east of the village and abutting on the bounds of Cambridge, a strong, brown soil of a fair staple, lying rather flat, upon a clay: west of the village, is a mixed soil of a good staple upon a gravel. South of the village towards Barton, is a thin, white soil, upon a clay; up the top of the hill is a strong, brown, heavy, earth, upon a reddish-coloured clay, or brick-earth; the lower part of this field consists of a dark brown mould, of a good staple, upon a clay; the enter-common, with Grantchester, is of a mixed soil. North of the village is a loamy well stapled soil, lying upon a gravel."

Madingley.—" The arable land is of a light coloured cold clay of a thin staple, upon a gault of an extremely close and retentive nature; in the hollows and lower parts of the fields, the soil is found to improve in staple, and becomes of a more tender and manageable nature."

Dry-Drayton.—" On the east of the village, is a thin cold clay upon a gault; north of the village is a brown tender clay of a good staple, mixed with gravel, lying upon a reddish-coloured clay or brick earth. South of the village the soil is very similar to that on the east, but has in it a very troublesome rag-stone."

Lolworth.—" The arable land is a tender clay of a good staple, lying upon a gault, and reddish coloured brick earth."

Boxworth.—" The arable land is a brown strong earth of a fair staple, lying upon a soft, yellow, and a strong blue and reddish coloured clay, or brick earth; the field binding upon Lolworth, is of a more tender and manageable nature."

Connington, Gravely, Papworth-Everard and Elsworth, all

" a cold,

" a cold, clayey soil, lying upon a stiff blue, and a wet, yellow clay."

Eltsley.—" The arable land, a tender, cold, loose clay, lying very flat, upon a wet yellow clay, or woodland earth."

Croxton.—" The arable land similar to Eltsley."

Caxton.—" East of the village, a cold, brown earth, upon a reddish coloured clay or brick-earth : south of the village, a similar soil."

Gamlingay.—" East of the village and adjoining the meadows, is a loamy sand ; the remainder of this field, is a thin, cold, hungry, clay, lying upon a gault ; south of the village and also adjoining the meadows, a deep, loamy sand, thence towards Potton wood, a similar cold and clayey nature ; north of the village and adjoining thereto, the sandy land prevails ; thence towards Wersley, a cold clayey soil. The meadow, or half-yearly land, is of a moory nature*."

Kingston.—" A tender clay upon a brick earth."

Toft.—" The surface of the soil is covered with a very thin bed of vegetable earth, immediately under which lies a stiff, strong gault, with a few veins of gravel."

Caldicot.—" Soil similar to Kingston and Toft."

Hardwicke.—" A cold, close clay, lying upon a yellow and white clay, and reddish brick-earth."

Knapwell.—" Soil similar to that of Hardwicke."†

Childersley.—" A brown clayey earth, lying upon a white and blue clay, and reddish-coloured brick-earth."

Girton.—" Soil of a gravelly nature ;" on the west adjoining the enclosures, a black deep mould upon a gravel ;

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* Long-Stow-Poor, stiff, wet, clay, or gault. A. Y. Ans. 42.

† Clay. A. Y.

vel; thence westwardly a reddish-coloured loam, upon a tender clay which ends in a strong clay upon a gault."

Oakington.—" Soil similar to Girton."

Long-Stanton.—" East of the village a deep, black mould, with some gravel; south-west and adjoining the enclosures, a strong, brown and well stapled soil, lying upon a clay."

Cottenham.— " Adjoining the village, a reddish-coloured deep, sandy loam, abounding with springs; towards the fens is a strong well stapled, black, loamy mould*."

Waterbeach, with Denny Abbey. On the west and towards Landbeach, is a well-stapled gravelly soil; binding the river Cam, a deep, brown loam, withoutgravel, lying upon a clay.

Lanbeach.—" South-east of the village a gravelly loam; north east and towards the fens, is a strong well stapled clay, lying upon a gault. In the lower parts a compound of strong earth and vegetable matter. In the higher parts a loamy clay, lying upon a gault."

Milton.—" The arable land a rich brown mould of a good staple, lying upon a gravel, and a strong deep loam upon a clay."†

Impington.—" A deep sandy loam lying upon a gault."

Chesterton.—" North-east of the village, a gravelly loam of a fair staple, lying upon a gravel; on the west a strong cling clay of a tolerable staple upon a gault."

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* Cottenham-Fen, " soil a black, turf, or moor, three feet deep." A. Y. Ans. v. 4.

" Cottenham open-field, a fine reddish loam on good gravel." A. Y. Ans. v. 4.

† Milton, " a very fine loam on gravel, and continues so to Cambridge." A. Y. Ans. v. 4.

Wickin.—" The arable land a deep brown mould, upon a dry bed of rag-stone."

Soham with Barraway.—" On the east of the town, a black sandy moor, lying upon a gravel; the remainder a deep, rich, black mould, lying upon a blue clay or gault, and clunch. Pasture extensive and of first quality; a large tract also, of the second quality."

The Mere, formerly a lake, now drained and cultivated, and the soil a mixture of vegetable matter and brown clay, contains about fourteen hundred acres.

City of Ely.—" On the north very rich pastures, variable in their soil, and lying upon a gravel, clay and gault; the arable lands, a well mixed, soft, sandy loam, lying upon a clay, and strong tough cling clay, upon a gault; west of the city, and binding upon the enclosures, a sandy loam upon a clay, and a tough clay, upon a gault; thence southwardly, a wet, heavy clay, and a light, dry, gravel."

Little-Port with Apshall.—" East of the village, and adjoining it, a strong, rich, deep, black land; thence south-eastwardly, a warm, sandy loam, of a good staple, lying upon a clay and sand; westwardly of the village, a black and brown mould of an irregular depth, lying upon a clay and sand."

Downham.—" On the east of the village, a heavy strong loam, of a deep staple, lying upon a clay; west, a heavy close, wet, cling, and tough clay upon a gault; south, and joining the enclosures, a warm, deep, friable mould, upon a reddish-coloured clay, or brick-earth, thence southwardly, the warm, brown mould is lost, in a tough, hungry, thin, cold clay, upon a gault."

Mepal.—" The arable land, a strong close clay, of a fair staple, lying upon a gault."

Sutton.—" The arable, a brown earth, of a good staple, upon a reddish clay, or brick-earth; a tough, thin clay upon a gault; and a small part of a mixed nature upon a gravel."

Haddenham, with the divisions of Haddenham-End, Lindon-End, Hill-row, and Aldreth-End.—" Soil, a cold, tough, thin clay, lying upon a gault. Lindon-End, upper part, a warm, sandy loam, upon a clay; towards the fen, the sandy loam is gradually lost, in a cold, thin clay, lying upon a gault. Hill-row, a firm brown mould, well stapled upon a gault and reddish-coloured brick-earth. The Aldreth-End, is similar to Lindon-End."

Wilburton.—" East of the village, a gentle, warm, and sandy loam, of a good staple; north, a strong, deep clay, lying upon a gault; south, a similar soil."

Stretham with Thetford.—" East of the village, the pastures consist of a strong, deep, black mould, lying upon a gault; the soil of the fields is similar."

Chatteris.—" East of the village, a deep, brown, compact, clayey loam, lying upon a gault; south, a strong, brown clay, of a good staple, lying upon a red clay; north-west, an open, warm, and gravelly soil, lying upon a clay, mixed with gravel."

Doddington and its Appendages.—" More light and gentle than Chatteris; the highland a gravelly loam, of a warm and kindly nature, lying upon a clay or gravel; the fen a light moor of various depths, and of the same structure with the level in general."

Elm.—" East of the village, taking the church for the centre, the high land is a silty, tender loam, lying upon a loam; south-west and north, a clayey loam, mixed with a small portion of infinitely fine sea-sand, or silt and vegetable matter, well stapled and lying upon a clay. The fen, a black putrid, vegetable matter, lying upon a substratum at different depths of turf moor and *bear's muck*, which finally rests upon a clay, the natural and antient surface of the country."

Upwell.—"The highland a strong silty loam of a good staple. The fen is a silt mixed with vegetable matter, or fen mould lying upon a turf moor, under which in many places is found a bear's muck, though the soil or superstratum is sometimes found upon a clay."

Outwell.—"Soil similar to Upwell."

Leverington.—"The upland a deep brown under clay, or loam, lying upon a clay; the marshes are a loamy silt of a gentle nature, lying upon a silt, or sea-sand; the fen is a vegetable matter, or loose black mould, upon a turf moor, resting upon a bear's muck and a clay."

Newton.—"The highland, similar soil to Leverington, as are the marshes and fen."

Tid St. Giles, The highland near the village, is a strong loam or clay, of a very good staple, lying upon a gault. The marshes are a hungry silt with little or no variation.

Leverington and Parsondrove.—"The more elevated part of the high land consists of a strong loam, upon a silt, and the lower part of a mild loam lying upon a silt; again a clay with a mixture of vegetable matter or fen mould, of a good depth, lying upon a buttery clay or gault. The fen of the first quality is a vegetable matter or moor, mixed with a hazel-coloured loam, or tender sea-clay, of a rich, deep staple, upon a silty clay. The fen of the second quality consists of a moor, or fen mould casually mixed with clay."

Wisbech St. Mary, including part of Wisbech St. Peter, and the Hamlets of Guyhurn, Tholmas, Drove and Murrow.—"The inside high land of the first quality lying between the Murrow-banks and Wisbech St. Peter, and binding north-westwardly upon Leverington Parsondrove, is an open loamy soil, very similar to that of the preceding parish. The low land of the same district consists of a fen mould, mixed with and lying upon a clay: the fen of the first quality similar to that of same quality in preceding parish; that of second quality is a vegetable matter or fen-mould, with little or no mixture of silt, lying upon a turf moor."

Thorney.—"The high land consists of an ash-coloured tender clay, of a good staple, lying upon a gault and gravel. The fen of the first quality is composed of completely putrified vegetable matter, with the natural clay upon which it rests, forming together, a deep, strong, black earth; that of the second quality, is a fen mould or moor, from fourteen to twenty-four inches deep, lying upon a gault and gravel. The third class of fen consists of fen mould, upon a turf moor, under which is bear's muck of various depths, which finally rests upon a clay."

Whittlesea.—"North-eastwardly of the village and adjoining thereto, is a brown, friable mould of a good staple, lying upon a clay and gravel; southwardly, a mixed brown earth and gravelly loam, of a tolerable staple lying upon a clay and gravel; the church-field is of a similar soil; westwardly of the village, the soil is similar to that north-eastwardly of it. The King's Delph-land, and extending southwardly from the village dyke, is a fen mould incorporated with clay; thence south-eastwardly the clay is gradually lost in an unmixed mass of fen-mould, upon a turf moor and bear's muck. The soil of the fen is a putrid vegetable matter upon a turf moor, under which is bear's muck of different depths."

Such is Mr. Vancouver's account of the soil of Cambridgeshire. Messrs. Britton and Bayley, in their "Beauties of England and Wales," thus describe it, "The soil of Cambridgeshire is greatly diversified. The rich marshes in the vicinity of Wisbech consist of a mixture of sand and clay, or silt. The fens of a strong, black earth, or moor, lying on a gault or gravel, or turf moor. The uplands of chalk, gravel, loam, and tender clay, upon a gault." To these accounts it may perhaps be superfluous to add a word, the observations however of individuals are entitled to notice; I therefore, will add those made to me on this subject. The arable soil which is most esteemed in the county, is called "white-land," which is particularly adapted to the growth of wheat; the celebrated seed-wheat called Burwell-wheat, is grown on this soil, which is not only found in the fields of that parish, but in those of many of the adjoining ones, and in others in various distant districts, and is that described by Mr. Vancouver as "a deep, rich, white loam, lying upon a chalk or gault;" it is however in general, not of a *deep* staple but *fleet*, (not more than three or four inches), and it has been found that ploughing into the substratum (chalk or gault), and bringing it up, has rendered the land nearly barren for many years; this soil has been found unfavourable to turnips; they die when their root comes to the clunch; this soil, on the least rain, becomes soapy, and poaches so as considerably to injure stock (particularly sheep) feeding on it. As the Cambridgeshire farmers call this,their favourite soil, "white land," so they have a soil they call "red land," which name indeed is too frequently applied by them to all light lands, but properly only to the soil composed of a reddish sand, with a mixture of chalk and gravel which is suitable to turnips. That the substratum of the white lands has not been found in all cases to produce the effect generally imputed to it, when brought upon the surface, appears from the following communication from Wimpole. "In digging wells at Wimpole, Lord Hardwicke penetrates one hundred and forty feet of what in Cambridgeshire is called gault, that is a pale, blue clay, seemingly free from sand, and consisting of impalpable particles; some of it being used to level the gar allotted to cottagers, and also spread on grass-lands, it was found to have considerable fertilizing qualities. As there is a prejudice against deep ploughing, lest any of this substratum should be touched, it is of some consequence to ascertain the fact. His lordship's bailiff, Mr. Patteson, from Lothian, is a friend to deep ploughing, and has yet found no evil to result from gault. Shells are sometimes found in it even at the depth of one hundred and forty feet."* The Rev. Mr. Turner of Burwell in a letter to Mr. Young, thus describes the white and red lands of that parish: "the greater number of acres under the plough are called white lands, as the appearance of the lands in dry weather, is white on account of its being a *shallow* soil, lying near the white-stone, and not being a spit deep in many places. There is another sort of plough land in the parish, which is called red land, lying down towards Newmarket Heath, but the quantity of this is very small when compared with the white land, and its quality is far inferior." This description of these soils is accurate, and such as I believe every Cambridgeshire farmer will assent to, as I found the generality did to that of Mr. Vancouver, of the other sorts of land in the county.

SECT. V.—MINERALS AND FOSSILS.

There are no mines in the county.

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* A. Y. Ann. Vol. 44.

SECT. VI.—RIVERS.

The principal rivers are the Ouse and the Granta, or Cam. The Ouse enters the county between Fen-Drayton and Erith, thence it runs eastward through the fens, till at some distance above Denny-Abbey, it assumes a northerly direction, and passing Stretham, Ely, and Littleport flows into Norfolk.* The Cam enters the county to the west of Guilden-Morden, thence flowing to the north-east, it receives several rivulets, and near Grantchester has its current enlarged by united waters which flow into this county from Essex; hence, taking a northerly direction, the Cam glides through the walk of the principal colleges at Cambridge, and having passed several villages, falls into the Ouse, at Harrimere in the parish of Stretham. The Nene is likewise a considerable river, it runs by Wisbech to the sea. The old and new Bedford rivers run upwards of twenty miles from Erith to Denver. These rivers are all navigable, and merchandize is conveyed on them by gangs of barges, from 4 to 7 and 8 each gang; the change for freight is,

For coals, from Lynn to Cambridge	6s. 6d. to 12s. per ch.
For corn, from Cambridge to Lynn	1s. per quarter
For flour, ditto.	1s. per sack
For corn, from March to Lynn	10d. per quarter
For coals, from Ely to Lynn	7s. 2d. per ch.

These freights vary in proportion to the supply of water, encreasing as the water decreases. These rivers are kept open in frosty weather, by ice-boats, drawn down the stream, by eight horses, four on each side.

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* From this river, are many cuts, called "loads," leading to several places in the county.

CHAP. II.

PROPERTY.

SECT. I.—ESTATES.

THE estates vary very much in size; there are many large ones, viz. those of Lord Hardwicke, Duke of Bedford, Duke of Rutland, Sir Henry Peyton, Mr. Thorpe, &c. &c. The greatest part of the county is perhaps in estates from 200l. to 500l. and 1000l. per annum; there are however many from 20l. to 50l. and 400l. per year, many occupied by the owners. Great part of the county (I had no means of ascertaining what proportion) belongs to colleges and other public bodies.

SECT. II.—TENURES.

EVERY kind of tenure is in this county; there are vast numbers of leaseholds, under the college and other public bodies; chiefly for 21 years, renewable every 7 years, paying also an annual rent, called a reserved rent; the usual fee for renewal, is from 1¼ to 1½ years rent; some are grants for a number of years, and some for life or lives.

CHAP. III.

BUILDINGS.

SECT. I.—HOUSES OF PROPRIETORS.

I AM not aware that there is any thing in these interesting to the farmer, or which suggest any particular observation; I speak of the houses of proprietors in general; those of the noblemen and gentlemen of large estates, are suitable to the rank and wealth of their owners.

SECT. II.—FARM-HOUSES AND REPAIRS.

THE farm-houses and premises are in general bad, inconvenient, and of such materials as must subject the owners to heavy expence in repairs. Lath and plaster, or clay and wattle, are the most common materials; in many places, clunch-walls, which are found very warm, dry, and durable, if attended to. There are many newly erected premises on the late enclosures, most of them defective in arrangement and conveniences, and almost all over-barned. The barns all too low on the stud. Mr. Treslove on his occupation at Trumpington, Mr. Lane of Carlton, Mr. Jennyns of Bottisham afford exceptions to these remarks. Mr. Lane's open-barn, (viz. a roof on posts) for corn, deserves attention; Mr. Jennyns has erected most convenient premises for his threshing machine, which is placed in the middle of a building, (a parallelogram), the corn is pitched on to a platform from behind the machine, and goes through it in front, where the straw is raked, and shaked, and pitched into a large straw-house adjoining; nothing is wanted to complete these premises but to build the stacks, for the corn is brought into that part of the buildings behind the platform of the machine from stacks, on frames to run in an iron rail-way, (as has been recommended by Mr. Young) to be drawn as wanted, into the building in which is the threshing-machine. At Ely is a remarkably large barn, (Mr. Page's) it is 232 feet long, 40 feet wide in the clear, and 69 feet high. Mr. Stone (late of Leverington) observes on the subject of this Section, "The farm-houses in this county are generally esteemed good; the farm yards and offices ill constructed. Situation for convenience of occupation, is little thought of."

At Whittlesea, are round the farm yards, clunch walls, seven feet high; they cost 2*s.* per running yard.

SECT. III.—COTTAGES.

THESE are wretchedly bad, speaking generally. Lord Hardwicke has set an example worthy of imitation, in having built several comfortable cottages, and having attached gardens to them; some few other gentlemen have done the like; but, it is to be lamented, it is only a few.

CHAP.

CHAP. IV.

OCCUPATIONS.

SECT. I.—SIZE OF FARMS.

FROM 20 to 100 acres; a few only exceeding 1000 acres; many from 100 acres to 1000.

SECT. II.—RENT.

Correct information on this subject however desirable, is not attainable by an indifferent person, nor indeed can it be reasonably expected from those whose interest may be, and there is reason to believe has been, affected by such communication. I have reason to believe the following nearly the real rents in many parts of the county; I had the account from a respectable quarter.

Enclosed arable from 15*s.* to 25*s.*; open field 7*s.* to 15*s.*; improved pasture 20*s.* to 30*s.*; inferior pasture, 7*s.* to 16*s.*; woodland 12*s.* to 16*s.*; improved fen 10*s.* to 25*s*; waste and unimproved fen 1*s.* 6*d.* to 6*s.* 6*d.*; half yearly meadow 10*s.* to 21*s.*; highland common worth 10*s.*; fen or moor-common worth 3*s.*; sheep-walk 1*s.* 6*d.* to 3*s.* 6*d.* The following was given me by a person in extensive business, and in high repute as a

commissione

commissioner of enclosure, land-steward, valuer, &c. &c. and who is in the receipt of large rents.

At Coveney, Mepal, Sutton, Witcham, Wentworth, Witchford, Wilburton, and Haddenham.	arable field 16s. to 20s. fen 12s. to 21s.
At Downham, Little Port, Ely, and Soham	arable field 18s. to 25s. fen 12s. to 21s.
At Stretham, Thetford, and Waterbeach	arable field 16s. to 22s. fen 10s. to 20s.
At Whittlesea,	arable field 10s. to 30s. fen 10s. to 20s.
At Thorney, tithe-free -	fen 16s. to 30s.

There are, however, many instances, particularly on new enclosures, of much higher rents than here stated, but it would be improper to include them when speaking of a county at large. Rents are paid mostly in money, though many by corn rents; the latter, chiefly of estates belonging to colleges; the act for which rents, requires that at least one third of the rent should be paid by a given quantity of corn, the corn however not being rendered in kind, is paid for at the highest price of wheat on a certain market-day. These rents have been a lottery-ticket to colleges, and it is somewhat remarkable that the proposer of them, should have left *money* to public institutions, instead of corn-rents which he had thought preferable. Land newly enclosed has been let very high, and the additional rent in consequence of its being tithe-free, has been much greater than any clergyman would have demanded for tithe. Mr. Young in his notes taken on the spot, and published in the years 1804 and 1805, in Annals, v.42 and 43, reports rents in this county, as follows: Doddington, Wimlington, and March, lands formerly highland-common, now pasture and arable, 25s. 30s. to 50s. Milton, when open field 10s. since enclosed 25s. to 30s.

	When open.	Since enclosed.
Granchester and Colten	5*s.* to 6*s.*	20*s.* to 25*s.*
Barrington	5*s.* to 6*s.*	20*s.*
Long-Stow	6*s.*	16*s.*
Abington Pigots	7*s.*	16*s.* to 20*s.*
Morden-Guilden	7*s.*	14*s.*
Connington	7*s.* 6*d.*	20*s.*
Knapwell	6*s.* 8*d.*	13*s.*
Elsworth	4*s.* 6*d.* to 10*s.*	18*s.*
Chippenham. Total rent	£1300	£2000
Little Wilbraham	6*s.*	16*s.*
Carlton	6*s.*	16*s.*
Weston Coville, Total rent	£ 700 to £800	1800

Waterbeach Fen, severalty, 13*s.* or 14*s.* open-field arable 23*s.* Ditto upland enclosed pasture, 20*s.*

The rise of rent in this county from 1790 to 1804, is stated by seven returns to the Board of Agriculture to have been from 17½ to 300 per cent. The rise of rents may also be judged of by Mr. Young's report of rents, as under.

In 1776, (see Annals, v. 4.)

"At Ely and two or three miles south of it, pastures very rich, letting at 20*s.* to 35*s.* and open arable field from 12*s.* to 20*s.* the fens, from 3*s.* to 6*s.* in general 7*s.* and 1*s.* draining-tax.

In 1785, (see Annals, v. 6).

"At Trumpington, field 8*s.* to 10*s.* About Wisbeach fen 7*s.* 6*d.* At March fen 7s. Chatteris tillage and meadow 20*s.* much at 40*s.*" In Cambridge St. Giles, arable lands lately enclosed, have been let at 40*s.* to £.6

per acre to the inhabitants of Cambridge, for pasture, and some even at those rents are continued arable. Dr. Nasmith of Leverington. says many of the hemp lands about Ely, let at 40*s*. The rents which Mr. Vancouver reported to the Board of Agriculture, as existing in 1794, may be seen in the first chapter of this volume.

SECT. III.—TITHES.

THESE are taken in kind in many parishes, particularly in those consisting of open field, the hirer giving from 3*s*. 4*d*. to 5*s*. 4*d*. statute acre for the *great tithes*. Where tithes are compounded for, an equal composition is paid on the average of the county, in many instances a much higher. Under the late acts of enclosure, tithes have been abolished for one-fifth of arable, one-eighth of pasture, one-ninth of fen, allotted and fenced in at expence of proprietors at large. Mr. Shepherd of Chittenham thinks land owners and tenants wrong in wishing to abolish tithes by giving land as a compensation; as the farmer's estate requires nearly as many buildings, &c. &c. and the latter's occupation nearly equal capital, attention, &c. &c. for the whole of any given quantity of land, as for four fifths of it. Mr. S. would rather the tithes should remain than give land for them. Mr. Sawyer of Cheveley, would prefer giving a corn-rent; Mr. King of Bottisham is of the same opinion, as are the farmers of Islesham. The rise of tithes in this county from 1790 to 1804 was stated to the Board of Agriculture, to have been from 2*s*. 6*d*. to 5*s*. per acre. At Wisbeach, tithes are compounded for by the acre *cropped*, but at what rate I could not learn on satisfactory authority. The Rev. Mr. Fiske, of Fulburne, thinks tithe-owners would be more inclined to compound, had they the same security as the landlord. Where tithes are gathered in this county, they are rated to the poor-rate at one-fourth to one-fifth of what the farmer is rated, generally at one-fifth. Doubtless each party should contribute to the maintenance of the poor, according to his respective *profit;* if those, who maintain that the clergyman should pay one-fifth and the farmer four-fifths of the expence of the poor, act on this datum, they tell us that the farmer's profit is four times that of the clergyman's. It would be desirable to have this subject ably elucidated, not only for the sake of justice, but for preventing the perpetual altercations between the clergy and laity, arising from the erroneous opinions and mutual distrust between them respecting it. Mr. Young has told the world that the farmer's profit is not more than 10 per cent. on his capital employed (on an average of situations); what do they say it is, who assess him four times the amount of the clergyman?

SECT. IV.—POOR-RATES.

THESE were stated by six returns made to the Board of Agriculture in 1804 to have risen, from 1790 to 1803, from 2*s.* 11*d.* to 4*s.* 8¾*d.* in the pound. The information I received on this subject in 1805 and 1806, warrants my stating them at much more than even the latter sum, at 6*s.* to 7*s.* and in many parishes at 10*s.* to 12*s.* and even higher. By an "abstract of returns relative to the expence and maintenance of the poor," published in Mr. Young's Annals, v. 53, it appears that the expense of the poor of this county from Easter, 1802, to Easter, 1803, amounted to £.55,954 14*s.* 11*d.* and is stated under the following heads.

	£	s.	d.
" 1st, Money expended out of any house of industry, or workhouse	44,137	15	3½
2d, Money expended in any house of industry or workhouse	10,248	6	1¼
3d, Money expended in suits of law, removal of paupers, and expenses of overseers and other officers."	1,568	13	5¾
Total	£ 55,954	14	11

Mr. Vancouver in 1794, stated the poor-rate of Cambridgeshire to average through the county 2*s.* 6*d.* in the pound. It should be remembered that a more blind guide than a pound rate, cannot be taken to ascertain *the rate per pound on a fair rental,* it being the universal practice to assess to the poor-rate at a certain part of a fair rental, and this part is scarcely the same in any two parishes, and always a secret in all. Now supposing Mr. Vancouver's report of the total rental of the county in 1794, £ 226,009 to be correct, and that the rates were then as he stated them, 2*s.* 6*d.* in the pound, it follows that the *then* expenses of the poor, were £28,251 2*s.* 6*d.*; now the expense from 1802 to 1803, we are told was £55,954 14*s.* 11*d.*, that is nearly double, in nine years; a proof of an alarming, and an enormous encrease, or that Mr. V.'s return, and that in 1803 are not correct.

SECT. V.—LEASES.

In great part of the county none are granted, this system (if it may be so called) cannot however continue, if the benefits looked for from enclosures are to be realized. Where enclosures have taken place, leases have in general been granted, and the usual covenant respecting cropping has been two crops and a fallow, viz. the course allowed before enclosing, and the course observed by many since. Mr. Custance (an eminent land surveyor, &c. &c. at Cambridge) requires, where the course of cropping is four " shifts," one-fourth layer, one-fourth fallow or turnips fed, or tares fed. Where the course is five " shifts," one-fifth layer of first year, one-fifth layer of second year, one-fifth fallow or turnips fed, or tares fed ; not more than one-fourth of layer to be mown, and that only once. Mr. Wedd of Trumpington thinks the more simple and fewer the covenants the better ; he thinks merely restricting the tenant from taking more than two crops and a fallow, would secure the estate from injury, and supersede the necessity of any other covenants ; he would however forbid the mowing layers oftener than once. Mr. Edis of Wisbech recommends that the covenants of a fen-farm be two-thirds of farm corn ; one-half of one third cole, one-half layer. About Wisbech and its neighbourhood lands are frequently let *by auction* for twenty years. The covenants allow cropping without restriction for the first fourteen years, but require that the whole breadth be in grass during the last six ; under these covenants, a needy speculator ruins the land. Mr. Waudby of March thinks that the best covenants for a fen farm are two-thirds to be under grass, one-third of the other one-third cole, and two thirds corn ; he would not restrict as to mowing or feeding. Mr. Stone of Leverington (in answer to queries put to him by Mr. Vancouver on this subject) says, "few leases are granted in this neighbourhood, but the covenants best calculated to preserve the fee-simple of the land let, undiminished, are the following." To restrain the sowing of hemp, flax, woad, madder, and mustard-seed, as no manure arises from them; the restraining cole-seed from standing for a crop, is founded on the like objection; where the first five of these are grown, the land ought to be expressly let for the purpose, and an extra rent set upon it, because it must necessarily be the worse for what it produces, which is never the case with a farm properly let, and skilfully managed. Forbid ploughing the highlands in general, if water can be got to render them fit for grazing. Of the proportion of land belonging to any farm, not more than one third of the land permitted to be ploughed, should be in corn every year, and the same as to the marshes, and from neither more than two successive crops should be taken. To restrain the laying manure on the ploughed lands is very expedient. I have seen instances (where leases have been silent as to the routine of the crops, and the lands on which the manure should be laid), of bad tenants manuring the ploughed lands, and cropping them without intermission during the terms of their leases: by this abuse the ploughed lands at the expiration were extremely foul, and wanted fallowing and laying down, and the grass land not improved as it would have been with proper manuring. Fewer crops of corn, and timely fallowing are therefore insured, by forbidding the ploughed lands to be manured, moreover the best species of pasture in every grazing farm, ought to be restrained from being mown. Mr. Vancouver write on this subject, "there is no greater error in the whole economy of country business than that which the gentlemen of Cambridgeshire are too apt to fall into, respecting the tenures they grant of their estates. Few are inclined to give their tenants such assurances of the certain and quiet enjoyment of their improvements, as reason dictates and justice demands. Had the same jealousy prevailed in Norfolk on the early improvement of that county, in vain would the landlords in conjunction with their tenants have expended such large sums in claying, marling, and otherwise improving their estates, if the tenant had not been assured of an eventual benefit and reward for his expense and labour, under the protection and encouragement of a lease for twenty-one years. The general state of the husbandry in the county of Cambridgeshire, demands the like assistance from the proprietor, as to the means, and the same indulgence in point of possession, as to reward for the industry and labour of the tenant, who will otherwise be little inclined to bury his property in the earth, or improve the surface by the sweat of his brow."

SECT. VI.—EXPENSES AND PROFITS.

I DID not meet with farmers enough in the county, keeping sufficiently accurate accounts from which any valuable information on this subject could be extracted. To the question, "what per cent. per annum on the capital employed, is cleared *in addition to common interest* by the generality of farmers in the county?" Answer, from 5 to 10 per cent; now nothing less than the latter appears adequate to the maintenance of a family, much less to the getting a fortune, except on very large occupations; for supposing the opinion prevalent in the county, to be well founded, viz. that not more than £7 per acre is employed on the average of arable occupations (though much more, is employed in many instances), the following will be the profit, taking it at 10 per cent. on farms of the sizes specified.

Number of acres.	Capital 7l. per acre. £	Profit being 10 per cent. £
50	350	35
100	700	70
150	1050	105
200	1400	140
250	1750	175
300	2100	210
350	2450	245
400	2800	280
450	3150	315
500	3500	350

Shewing that farming on a small scale deserves not the attention of men of skill and ability. The farmer, however, whose capital is his own, would have to *spend* one-third more than the above sums, viz. the 5 per cent. on his capital, made in addition to these profits, viz. the farmer having 50 acres, would have an *income* of £52 10*s.* he with 300 acres, £525 per annum. By having these sums to *spend*, is to be understood he would have them for the purpose of paying such of his domestic and other expenses, as are not absolutely chargeable to his farm ; for when it is said that a profit of 10 per cent is made, no other part of the farmer's house expenses, &c. are supposed to be charged to the farm, than the board of servants, &c. kept for the express purpose of carrying on the farm, and who are solely employed thereon ; it is not meant that he clears 10 per cent. after paying *all the expenditure* of himself and family, whether chargeable to the farm or not ; it is, however, notorious, that a farmer calls that profit which he has at the year's end " to spare," and he who has had a profit, however large, if he has expended the whole, will say "he has made nothing" that year. If it be true that the profit of farming is in proportion to the capital employed, it follows that grass-farms are more profitable than arable ones, for the capital requisite on the former, is double, in many instances treble, that of the latter: but it is not generally allowed that the profits vary in this degree, indeed it may be safely asserted that they do not, and that the idea that profit varies with the capital is therefore incorrect, it may however be safely asserted that profit varies with the sum *judiciously applied*, viz. where a greater or more valuable product is obtained, but not where no such benefit arises; of the latter description is ploughing with a 60 guinea horse, where a 30 guinea one would answer the same purpose, expending money for ornament instead of use, &c. &c.*

Let us take for granted that the farmer is to make 10 per cent. *profit*, viz. that sum in addition to common interest, and that the following statements are nearly facts:

1st, Produce per acre	£.	s.	d.
Turnips, worth on an average of applications	3	0	0
Barley, 8 co. at 18s.	7	4	0
Clover, worth on an average of applications	3	0	0
Wheat, 6 co. at 35s.	10	10	0
Beans, 6 co. at 18s.	5	8	0
Pease, 6 co. at 18s.	5	8	0
In 6 years	34	10	0
In one year	5	15	0

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* Under this head I might place a return made to the board exhibiting the expenses per acre on turnips, barley, wheat, oats, and manure in 1790 and 1804, but it appears only calculated to

2nd, Suppose a fallow every 4th year.	£.	s.	d.
Fallow	0	0	0
Crop as of above	5	15	0
Ditto	5	15	0
Ditto	5	15	0
In 4 years	17	5	0
In one year	4	6	3

3dly, Suppose the old system of two crops and fallow.

	£.	s.	d.
Wheat	10	10	0
Barley	7	4	0
Fallow	0	0	0
In 3 years	17	14	0
In one year	5	18	0

4th, Crop and fallow	£.	s.	d.
Wheat	10	10	0
Fallow	0	0	0
In 2 years	10	10	0
In one year	5	5	0

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mislead, and certainly affords no valuable information, as the authors of it no doubt did not all understand the question which produced this return in the same light; consequently, no conclusion can be drawn from their answers. The return I allude to is entitled "cultivation."

5th, The Norfolk course	£	s.	d.
Turnips	3	0	0
Barley	7	4	0
Clover	3	0	0
Wheat	10	10	0
In 4 years	23	14	0
In one year	5	18	6

Recapitulation	£	s.	d.
1st Course	5	15	0
2nd	4	6	3
3rd	5	18	0
4th	5	5	0
5th	5	18	6
Number of Courses 5)	27	2	9
Average	5	8	6½

	£	s.	d.
Hence it appears that the annual acreable produce of lands suitable to the above crops, is	5	8	6½
Deduct, 10 per cent. on £.7 per acre, for farmer's profit		14	0
Remain for outgoings per acre	4	14	6½

Is this sum really expended on the average of arable lands at the present (1807) time, producing these crops? It may be presumed it is, for in 1803 it amounted in Suffolk on the average of the returns made from that county to the Board of Agriculture on farms of 100 acres of arable land, to £4 15*s.* 6*d.*¾ per acre.

N. B. No similar return was made from this county, but the expenses in it, certainly are not *less* than in Suffolk.

The returns from Suffolk here alluded to, were made under the following heads:

	£.	*s.*	*d.*	
Rent	0	18	2½	Now higher
Tithe	0	5	4¾	
Rates	0	4	0	Now higher
Wear and Tear	0	5	0	
Labour	1	6	4¾	viz. 4½ men at 30*l.* each, or 100 acres arable
Seed	0	8	4¾	Now higher
Team	0	17	7	viz. 4½ horses at 20*l.* each, now higher
Manure purchased	0	5	2¼	on some farms none, on others more
Interest 5 per cent	0	5	4¾	Now 7*s.* viz. on 7*l.* capital per acre
	£4	15	6¾	

From this view of the subject it appears that there is left for profit at a rent of 18*s.* 2½*d.* per acre, 12*s.* 11¾*d.* per acre; thus, average of produce per acre, per annum

	£.	*s.*	*d.*	
average of produce per acre, per annum	5	6	8½	
Outgoings per acre, per annum	4	15	6¾	
Remains for profit	0	12	11¾	per acre.

It may be asked if there be any accuracy in these calculations, how account for the avidity which lands are hired, at rents *considerably above* that here stated, and subject to many higher expenses? I answer, many no doubt hire on speculation, hoping for better times, and that they shall grow more, or obtain higher prices, than can be calculated upon as averages; no doubt some do this, and they are talked of, while those who suffer are unnoticed. It may also be true that individuals may farm at less expense than here stated; but it is equally true, that more farm at much greater. There is some trifling produce from arable lands not noticed here, such as feed of stubbles, &c. from which some money is also raised, but it is not of sufficient amount to form part of the calculation on produce; part of the straw also raises what it is worth for keeping cattle lean; its other application, viz. for muck is necessary for the production of the crops, and raises no money but in that shape.

The *income* of a farmer on 100 acres of arable land would be from a *profit* of 10 per cent on	£.	s.	d.
£7 per acre, profit	70	0	0
and 5 per cent on his capital	35	0	0
Total	105	0	0

Also, what he might shorten the outgoings by his own labour, &c. shewing that *no less profit* than 10 per cent is adequate on occupations under 100 acres arable. On *very large occupations* than 10 per cent, no doubt would produce a handsome annual income.

CHAP. V.

IMPLEMENTS.

IN the fens is the common foot-plough with a running coulter, which with the share is kept constantly bright, and filed particularly sharp; to these ploughs is frequently annexed an appendage called a "boy," to lap in the rushes, &c. &c. which it does completely. The half and three-quarter Dutch plough, together with the common swing and foot-ploughs, are used in the highland parts of the county. The dagger whole and half winged shares are variously employed. The harrows, carts, waggons, and other implements of husbandry in general use in the county, merit neither notice nor imitation. Mr. Shepherd of Chippenham has invented many implements, which do him credit, such as harrows, rolls, dibbling-machines, &c. &c. and he has also contrived an engine for sowing small seeds; it is a drill without hoppers, the cups delivering the seeds broadcast directly on to the land; I saw some layers sown by this machine, beautifully regular and a full plant. Mr. Shepherd claims the invention of the drill for drilling oil-dust and turnip-seed together, and for which Mr. Burwell of Thetford in Norfolk, undeservedly as Mr. Shepherd terms it, obtained a silver cup of Mr. Coke, in 1803. Mr. Burwell as confidently asserts he was the inventor. The Rev. Mr. Brown of Connington has an excellent implement which he calls a "cleanser." I viewed some fallows made by it which far surpassed any I saw in the county, being free from weeds, and of a fine deep tilth. Mr. B. (in Annals, v. 42), speaks of this implement justly thus; "it will work upon any soil, but more particularly upon light, and it has been used, and that continually, upon the heaviest; it is worked by either two, three, or four horses, according to the roughness of the tillage, and will raise upon bean-stubble on the strongest soil, sufficient tilth in a mild season to harrow in wheat without any ploughing. It requires only one person to attend it, and that is the driver, as it will keep steady to its work by itself. By employing two sets of horses, it will cleanse from six to eight acres each day. This implement is to be regulated so as to cut any depth with the greatest ease." The price of this machine, which Mr. B. offers to the public is with wheels 21*l.*; without wheels 16*l.* 16*s.* Mr. Filby of Snailwell, has a mill for thrashing clover and other small seeds, a two or three horse power; the cob is put into a cask, in the middle of which is placed an upright iron, having through it pieces of wood in the form of flyers to a jack, which are full of nails, the heads standing about a quarter of an inch out; the seed is beaten out by the revolution of these flyers (affected by a wheel at the top of the upright iron, communicating with the horse-wheel); it will thrash about 12 fans an hour. The drill-roller has been tried on "white lands," and found not to answer the purpose, the harrows will not take out the grooves made by the roller, consequently the seed cannot be covered by them. Mr. Wedge of Wesley-Bottom uses it on light soils and approves it.* The Kentish nidget is also used by Mr. Wedge, on summer lands instead of the plough. The mole-plough has been tried on pastures at Madinglay, by Sir C. Cotton and approved; the saving is great, 10 to 12 acres may be done in a day, with

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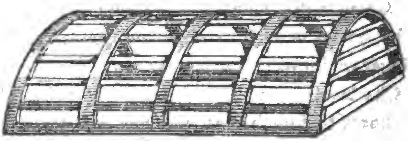
* Mr. Philips of Bourn-bridge approves it for wheat and barley on light soils.

12 horses; expense men and horses about 3*s.* 4*d.* per acre; but Mr. Young (Ans. v. 42), gives an account of this implement drawn by a windlass, turned by eight women; this method would be executed in the best style, were it adopted at Madinglay; the admiral would certainly be *at home*, while directing it. It is spoken of highly by Mr. Y. and consequently deserves attention; the working this plough by horses is such an objection (on account of the great danger of injuring them) that very few farmers use it. Sir Charles Cotton has also tried a "hoe-plough," which is drawn by four horses, the hoe one piece of iron, about 3½ feet long, and about three inches broad, and sharp in front; is used on fallows when in tilthe, and answers well, will do the work of six ploughs, cuts six inches deep, this like all other large hoes, cannot work where there is any grass or weeds of any description as it would choke. Rev. Mr. Leworthy of Harston has carts for harvest work, low, long, and light; his harrows are very powerful, are drawn by four horses, can be regulated to any depth, and have coulter-teeth; he uses them on fallows instead of the plough. Mr. Boyce of Whittlesea has an excellent dressing machine by Couch of Harlston, near Northampton, costs 18 guineas, will dress 30 Co. of wheat *per hour*, and well attendance, two men, one boy, one woman. Mr. Edis, of Wisbech, has all Cook's machines, also a powerful scarifier which he uses instead of the plough, on his fallows, and approves it. The double-furrowed plough has been used by Mr. Darnton of Babraham on a light soil; he has laid it aside, thinking he gained nothing by it; he has tried cast iron plough-breasts only, and approves them.

Mr. Mortlock at Abington has a sheep-rack of which his bailiff speaks highly; it is formed by splines about six or eight feet long, across which and at right angles to them, are nailed half hoops. This rack is placed in a concave position on the ground, and when filled is inverted. Less waste is said to be made in feeding out of this rack, than out of any other, and the hay is less exposed to wind.

Mr. Mortlock's Sheep-rack.



The one-horse Norfolk foot plough has been used by Mr. Tharpe of Chippenham, and by Mr. Barker of Swaffham for ploughing in barley, and are approved. Shims for shimming fallows are coming into use; I observed them on both sides of St. Ives's road. Threshing machines are becoming general, I saw none however differing from those which are to be seen in every county, excepting that of Lord Hardwicke, worked by water, of which it is to be lamented, it has not sufficient supply, except from about Michaelmas to Lady-day; it will thresh 60 Co. per day, and well; there are annexed to it, stones for grinding corn, a dressing machine and chaff-cutter. His lordship has also one worked by four horses, will do about 15 quarters of wheat, 30 of oats, beans, or pease, and about 20 of barley in a day; cost about 250*l.* Mr. Lane of Carlton has a threshing machine by Rennie, on a most tremendously large and expensive scale; to it are attached a flour mill, dressing machines, apparatus for dressing small seeds, &c. &c. &c. and is worked by six horses; Mr. Lane talks of working it by wind. I was not informed the cost of this machine, it is doubtless such as will deter any body (having profit in view) from having one. I saw also threshing machines at the following places. At Harston (Rev. W. Leworthy's) by Bossmore of Doncaster, Yorkshire, will thresh 24 Co. of barley, 25 Co. of wheat per day, and is worked by four horses, it will not thresh beans and pease, it splits them and reduces bean straw to dust; it cost 100*l.*; a winnowing machine, a chaff-cutter, and a steel-mill (for breaking-corn) are attached to it. Mr. Edis of Wisbech, has also one of Bossmore's threshing machines worked by six horses, will thresh 21 Co. of wheat, 42 Co. of oats, it cost 80*l.* to 90*l.* He has also one, (by Burwell of Thetford, Norfolk), to which he applies four horses, although originally intended for two. It answers as well as Bossmore's, and costs about 70*l.* Mr. E. observed they both starved his hogs. Mr. Jonathan Page of Ely, has one (by Yellowly), which, together with expences to which it led, cost 500*l.* and yet does its work badly; it is too hard work for six horses; it separates straw from chaff. Colonel Adeane, of Babraham, and Mr. Wedge, of Westley Bottom, have threshing-machines. The Rev. Mr. Jennyns, of Bottisham, has one by (Hart of Brinkley), of which he speaks in high terms; it is worked by four horses, will thresh 20 Co. of wheat in five hours. The portable threshing machines common in Suffolk have not found their way into this county; they cost about 63*l.* and are worked by four horses; will do (taking one grain with another) about 25 Co. per day; they are in repute.

There are various opinions of threshing machines; the following calculation may perhaps shew nearly that which they are entitled to. I will take it for granted that four horses and eight people are necessary to work the generality of them, and that their original and average cost, (including expences to which they lead in making conveniences for working them) is 80*l.* and that they will (taking one grain with another) and stoppages by accident, &c. &c.

into the account, thresh 20 Co. per day, where more is done, it is by more horses and more expensive machines. The portable ones will not do more, including the time of removing and fixing them, nor will any other of 80*l.* cost, as I found.

Expense per day working	£.	*s.*	*d.*
Four men at 2*s.* each	0	8	0
Four boys or women at 1*s.*	0	4	0
Four horses at 2*s.* each	0	8	0
	1	0	0

This number of persons will certainly be wanted, if the straw be loaded on to waggons, and an equal number will be wanted on the generality of premises, which are not calculated to get the straw, &c. to and from the machine, and out of the way to the best advantages; many are worked by more men, and fewer boys or women, and it is contended to greater benefit. To these expenses, are to be added others, which I am at a loss to reduce to a daily charge on the number of days a machine is worked; first, interest on first cost of machine; secondly, annual repairs; thirdly, decrease of its value.

	£.	*s.*	*d.*
The first interest on cost, viz. on 80*l.* at 5 per cent.	4	0	0
The second repairs per year at least	4	0	0

The third is a serious one, and is that which I have never seen (why I cannot tell) in any calculation on this subject. Is it included in the charge usually made per annum, for keeping it in repair, taking it for granted that is sufficient to keep the machine as good as when new? Be it so; does it therefore follow that the machine having

ing had annually such sum laid out upon it, will be at any future time of the *same saleable* value? By no means: instances are innumerable of their fetching not one-fourth of their original price, after having been used (and received no injury), only a year or two; this must inevitably happen to machines which are rivalled every day, by those which succeed them. Now when a man calculates on the probable result of any undertaking, does he not consider the value of stock from time to time employed in that undertaking? So surely should he calculate who is about using a threshing machine, and consider its probable value at any future period. To state this point in the most favourable way (not to offend the advocates for these machines), I will suppose that the generality of farmers are from various causes liable to be obliged to decline business, or part with their stock, or that it will from deaths be alienated every *fourteen years*, under such a probability it would be advisable to consider what would be the probable worth of any threshing-machine at the end of such period. This cannot I think be set (when the improvements in them are considered) at more than one-fourth of its original cost. It is to be doubted whether it ought to be set at so high, though in such repair as to be as good as new. However to call it one-fourth, viz. in fourteen years 60*l.* will be sunk by a machine which cost 80*l.*; 60*l.* in fourteen years is nearly 4*l.* 5*s.* 9*d.* per year; query, what is this per day on the number of days a machine is used on an average of occupations? It may perhaps be fairly supposed they are purchased by farmers occupying 150 acres and upwards of arable land; small farmers hire portable ones. Taking a farm of 150 acres arable, cropped one-fourth fallow, one-fourth barley, oats, beans or pease, one-fourth clover, &c. &c. there will be grown yearly 37½ acres of barley, oats, beans, or pease; call the average of these 7½ Co. per acre, viz. 271 Co.; of wheat, at 5 Co. per acre, on 37½ acres, 187 Co; together, 458 Co., that is at 20 Co. per day, 23 days work; an expense therefore of 4*l.* 5*s.* 9*d.* annually being incurred on 23 days work, is 3*s.* 8¼*d.* for each of those days; it appears then that the expense per day of a threshing-machine, on a farm of 150 acres arable, is as follows:

	£.	s.	d.
Four horses	0	8	0
Four men	0	8	0
Four boys or women	0	4	0
Interest on first cost of machine 4*l.* per year equal on 23 days, to per day	0	3	5½
Repairs of machine 4*l.* per year, equal on 23 days, to per day	0	3	5½
Decrease of value of machine in 14 years, is per year, 4*l.* 5*s.* 9*d.* equal on 23 days, to per day	0	3	8¼
	£1	10	7¼

Total expense, therefore, of threshing 20 Co. of corn by the machine, and on the farm assumed, is 1*l.* 10*s.* 7¼*d.* viz. 1*s.* 6*d.* per Co. round, much above the price by hand. Do the advantages of these machines make amends for this extra expense?

This statement, it must be allowed, does not shew much in favour of machines of this sort, and on the size-farms assumed; they would no doubt cut a better figure on large occupations, but it appears they are of no advantage on others; nor can the small farmer *hire*, to advantage; the expense being equal to that here noted. It should however be remembered that the calculation here made does not apply to threshing machines which also grind corn, dress seeds, &c. &c. But perhaps the comparative expense between threshing by hand, and by a machine, is not the most weighty consideration, and though the latter be greater than the former, it may be preferable from the many attendant advantages; these no farmer wants to have pointed out; a material one is, that it protects him from imposition of workmen, where they are plentiful, and affords him a resource where they are not; in short, a threshing machine is as necessary to a farmer, as a tithe barn to a rector.

CHAP. VI.

ENCLOSING.

CAMBRIDGESHIRE has gone far into this measure since 1770, and in consequence its farmers have an opportunity of redeeming the county from the imputation it has so long lain under, of being the worst cultivated in England, and of proving (the fact) that the same industry, spirit and skill which have been manifested in other parts of the kingdom, exist also in this, the open-field state and system precluding the possibility of exercising them. It is somewhat singular, and is a striking proof of the snail-like progress of improvements in agriculture, that the very same ideas which are now entertained by the advocates for enclosures, existed and were published in 1650 by Walter Blyth, who has pointed out the evils of a "Champion country," and the benefits to be expected from its enclosure, with as much zeal and ability as any writer of the present day. In 1783 queries were sent to the parishes in this county, which had been enclosed in his present Majesty's reign, up to that time, with a view of ascertaining the effects of enclosures. It is necessary to state these queries and the answers to them, and to make some observations on them.

Queries.

1st, What number of acres in your parish were enclosed under the act passed?

2nd, Was the land then enclosed, heath, down, fen, waste land, common, or common-field.

3dly, What number of acres then enclosed were annually sown with wheat before such enclosure, according to the best information you can obtain?

4thly, What number of acres then enclosed have been annually sown with wheat, since such enclosure?

5thly, Is the annual quantity of wheat grown in your parish, increased or diminished since the enclosure, and in what proportion?

6thly, Is the produce in other articles in your parish, increased or diminished since the enclosure? State which are increased, and what diminished, and in what proportion.

Answers to above Queries.

From Abington Pigots (enclosed 1770) by Rev. —— Alern, the rector.

To query 1st, About 1000 acres.

2d, Chiefly arable, open field dispersed.

3rd, About 350 acres.

4th, About 40 acres increase.

5th, Not at all increased.

From Knapwell (enclosed 1775).

To 1st, About 1100 acres.

2d, Common field 1000, common 100 acres.

3rd, About 150 acres.

4th, About 170 acres.

5th, Increased about one-fourth.

6th, Barley increased one-fifth, oats and pease decreased one-fourth by introducing clover and other grass-seeds; sheep increased.

From Weston Colville (enclosed 1777) by Rev. H. A. Lagden, rector.

To 1st, 248 acres, 1 rood, heath; 110 acres, common; 1547 acres, 2 roods, common field.

2d, 30 acres, 1 rood, waste land, total 1936 acres.

3rd, About 200 acres.

4th, About 410 acres.

5th, Increased one-half.

6th, Pease, fewer; oats, increased one-third; barley, double; feeding-grass, decreased two-thirds, seed-land for feeding increased one third; mowing land less, artificial grasses more; sheep increased from 1000 to 1200, before enclosure wethers kept, since ewes.

From March (enclosed 1792) by Rev. A. Jobson, curate.

To 1st, About 3400 acres.

2d, All commons.

3rd, None.

4th, About 400 acres.

5th, Increased.

6th, Cows decreased, butter advanced 4*d*. per pound.

Chippenham and Wimlington, (the latter a hamlet to March) were enclosed in 1792 also; I was not furnished with the answers to these queries from either of these parishes, if any were sent.

From Barrington (enclosed 1796) by

To 1st, About 2000 acres.

2d, Common-field land.

3rd, About 300 acres.

4th, About 300 acres.

5th, Expect increase.

6th, Sheep the same, they are now dry stock. Cows two-thirds less, other articles much the same.

From Little Wilbraham (enclosed 1797) by Rev. W. Butts, rector.

To 1st, About 1800 acres.

2d, About 900 acres field, 500 acres common, 300 acre heath.

3d, About 170 acres.

4th, More than 300 acres.

5th, Increased in number of acres, nearly double quantity per acre.

6th, Other grain more. As many sheep, and much better fed from introduction of turnips, and artificial grasses; cows rather diminished, but those remaining better kept.

From Great Wilbraham, (enclosed 1797) by Rev. T. Stevenson, vicar.

To 1st, About 2800 acres.

2d, Heath, fen-common, and common field.

3d, About 280 acres.

4th, About 300 acres.

5th, Increased about 80 quarters.

6th, Barley increased about 100 quarters, rye diminished about 80 quarters, pease diminished about 20 quarters, oats diminished about 30 quarters; an increase is expected in all.

From Swaffham-Bulbeck (enclosed 1798) by James Barker, Esq.

To 1st, 3260 acres (statute measure).

2d, Heath, fen, waste lands, common fields, and common.

3d, About 450 acres.

4th, About 500 acres, in 1799 and 1800.

5th, Decreased on average of the two years, nearly one-half.

6th, Barley, oats and pease increased.

From Harston and Hauxton (enclosed 1798) by Rev. W. Leworthy, Rector of Harston.

To 1st, 1000 acres arable, 800 acres pasture.

2d, Common field, and commonable land.

3d, One-third, viz. about 333 acres.

4th, Not known.

5th, Increased about one-sixth, and will still more increase.

6th, Sheep diminished one-third, but they will increase as well as every other article. N. B. These answers are also applicable to the parish of Hauxton, except the number of acres which did not exceed 600.

From Long-Stow (enclosed 1798) by Rev. R. Heighton, rector.

To 1st, about 1500 acres, statute measure.

2d, Old enclosure, small part of it arable, about 200 acres common, open field, arable, about 40 acres (part of old enclosure) woodland.

3d, About 150 acres.

4th, About 66 acres in 1799.

5th, Diminished in the proportion of 80 to 150.

6th, Every produce diminished, the breed of young cattle and lambs will be diminished. There will not in future be so much corn grown.

From Pampisford (enclosed 1798 or 1799).

To 1st, 1240 acres.

2d, Common and common-field.

3d, 127 acres.

4th, About 124 acres.

5th, Will increase one-sixth.

6th, Will doubtless increase corn; sheep decreased one-third, cows decreased about one-fourth.

From Grantchester and Coton (enclosed 1799) by Rev. W. Butts, vicar.

To 1st, About 1500 acres.

2d, Mostly common field.

3d, About 300 acres.

5th, As much as before enclosure.

6th, Clover and artificial grasses increased considerably, also barley and oats. N.B. These answers relate only to Grantchester.

From Carlton with Willingham (enclosed 1799) by D. Berguer, B. D. rector.

To 1st, about 1050 acres.

2d, Heath, waste-land, common, and common-field.

3d, About 300 acres.

4th, About 70 acres.

5th, Probably quantity will increase.

6th, Barley will increase, artificial grasses and turnips will increase, sheep will be doubled at least.

From Milton (enclosed 1800) by Rev. S. Vince, minister.

To 1st, 1378 acres.

2d, 937 acres common field, 213 acres enclosed pasture, 228 acres common and waste.

3d, About 300 acres.

4th, About 100 acres.

From Guilden-Morden (enclosed 1800) no answers, allotments not made.

From Elsworth (enclosed 1800) by Rev. M. Holworthy rector.

To 1st, No allotments yet made.

2d, 2000 acres arable, 1000 acres commons, 700 acres old enclosures, and woodland and meadow.

3d, One-third of arable, viz. about 666 acres.

From Connington (enclosed 1800) by Rev. T. Brown, rector.

To 1st, From 1400 to 1500 acres.

2d, Down, which was sheep common, waste and other common for sheep or cows, about 1000 acres common-field.

3d, About one-sixth arable, viz. about 164 to 170 acres.

4th, Not one acre, the allotments not being made.

5th, Neither increased nor diminished, less wheat and every sort of grain will be grown ; examine strictly your returns, and you will find my words true.* Population is decreasing where enclosures take place.† Fewer calves will be fattened and raised by half, fewer sheep by half, fewer cows by half. Enclosures will be the ruin and destruction of this country.

6th, Nothing yet sown this spring.

Observations on the above answers.

Every farmer knows that it requires some years to bring lands exhausted by cropping, deluged by water, matted by spire grass, and filled with weeds of every description, (the situation of many hundred acres of land in this county) into that cultivation and heart, and into that course of cropping from which the greatest produce is to be obtained. It is also well known that from the moment an idea of enclosing prevails in any parish, not only all improvement ceases there, till the allotments are made (a space in some instances of three or four years), but the common and annual manuring, weeding, &c. &c. ; hence, *immediately after* an enclosure, less corn will be grown, fewer cattle supported, and every product lessened, but it does not by any means follow that in *future* such will be the case ; when therefore it is asserted *immediately* after enclosing, that less corn is grown, less stock is kept, and in short that every product is decreased, it may be remarked in return, this may be the case, and yet enclosure a good thing ; no one however would be so bigoted as to retain such opinion, had sufficient time elapsed, and the requisite steps been taken, and these facts the result. Of the eighteen parishes where inquiries were made in 1780, and from which answers were obtained, only four had been enclosed long enough to give any information, from which conclusions for or against enclosures ought to be drawn; they were Abington Pigots, enclosed 1770, Knapwell, enclosed 1775, Weston Colvill, enclosed 1777, the next (Barrington) was enclosed in 1796 and the others after that period. It will be observed that the answers vary in a great degree, and it may perhaps be safely asserted, they are as much for as against enclosures, indeed nothing can be determined from them on either side of the question, unaccompanied by explanation, and further information. Suppose query to parish A. Is the wheat grown in your parish increased or diminished since the enclosure? Answer, Increased; same query to parish B. Answer, Decreased. Does it follow from hence that the parish A. has benefited, and the parish B. suffered by enclosure? surely not: unless the application of the land in both cases were the same before, and after enclosure; were it otherwise, no conclusions can be drawn, and answers unaccompanied by the necessary explanation, tend only to deceive. The comparison should be between the *total product* (of whatever nature) on a given quantity of land, a number of years before and after enclosure; if the result of such comparison be not favorable to enclosures, it will be difficult to account for the avidity with which newly enclosed lands are sought for at a great advance of rent, and the tenants expending even under these considerable sums for improvement.

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* The reader may judge whether these returns speak this language.

† Nine out of ten of the persons with whom I conversed in the county on this subject, were of a directly contrary opinion.

We have seen the opinions and information given on this subject in 1780; I will now add those I collected in the county, and have since been furnished with.

From Great and Little Abington and Pampisford. Great tithes increased in value considerably, vicarage doubled, enclosed by contract for less than one fourth of usual expence: Rents considerably increased. Weston Colville, rectory much improved, rents much advanced, more corn grown, stock of better quality, fewer cows. "Has been enclosed 23 or 24 years, quantity 2400 acres, of which 500 old pasture, and about 150 common, 300 heath, all the rest open arable, rent between 700*l.* and 800*l.* and paid tithe; now about 1800*l.* tithe-free. Land given for tithe. Sheep before from 40 to 50 score, very badly kept, merely for fold and wool, todded 11, coarse wool; now 60 score ewes, and finer wool; Norfolks. Mr. Houghton has a little cross of South Down. Corn a great deal more than before. Commons and heath twice as much as before enclosure, more wheat acre for acre on lay than before on fallows; cows considerably more before than now. Before 100 head of cows and young stock, now not more than 50 or 60. Old enclosures where cows went over, are broken up. The cows were very ill-fed on the common, are now as well kept as the county will permit. Before the enclosure the farmers could not live at the old rents, much land given up at 1*s.* per acre. Poor—there are several parcels of land laid to the cottages, some large gardens, others two or three acres, according to their rights; and join their houses, and are now in their occupation. They had during the scarcity a trifle allowed them, otherwise never thought of putting them in the parish books at all. They are very comfortable and much better off by this means; but they do not all keep cows; they join among themselves for ploughing and have bits of corn; the land is good, and one man has cropped it 10 or 12 years together. They are proprietors; others, who before the enclosure hired farms, upon the land being allotted together for the landlords, of course lost their occupations and could keep cows no longer. Population decreased." Annals of Agriculture, v. 43.

March (a hamlet of Doddington). Tithes remain as before enclosure; are compounded for. Population increased, poor more comfortable, rents increased 1½ of former rent, sheep increased. A common right before enclosing let for 8*l.* per year, allotment in lieu of it for 20*l.* expense of enclosing 20*s.* per acre. "Quantity, 3440 acres. Soil—near 1500 high-land, that is not subject to floods; the rest fen; the whole common never ploughed, much overrun with rushes, thistles, &c. &c. Rent.—There were 180 commonable rights, the average was about 7*l.* per year to let, each for six cows and one horse, on the highland commons; four horses or eight neat beasts, or thirty-two sheep, on the fen from May-day to Michaelmas. From Michaelmas to May-day they stocked four horses or eight beasts, or thirty-two sheep, to run over the whole of both commons. Except from Lady-day to May-day, the highland commons were laid for pastures. The land now lets on an average at 20*l.* a right, and per acre over the whole, at 25*s.* It was a limited common, there were eight cottages besides, with rights for two cows from May-day to Michaelmas, for which an allotment of 2½ acres were made. The 3440 acres produced in the first seven years 163,000*l.*; in cole-seed, at 42s. per acre, oats at 16*s.* to 24*s.* per quarter, and eight to ten quarters per acre; pasture from 50*s.* to 70*s.* per acre; cole-seed 40*l.* per last, five quarters per acre; wheat 50*s.* to 70*s.* per quarter, three to four quarters per acre.

About 1000 sheep were kept in summer before the enclosure, and in winter perhaps 2000, but it can be only a near guess, probably 1500 for the year. The sheep were good, and would give four to the tod: now not

1000. Cows, 1090, were regularly kept as the stint stock, now not 100. Horses.—The same for dairy men,and others kept teams for their business and for hire. Labour amounts to 25*s.* per acre, viz. 4300 on the 3440 acres. The houses are all full, and several new ones built. Tithe.—the composition 2*s.* 3*d.* for oats, 3*s.* 3*d.* for barley, 3*s.* 9*d.* for wheat, 5*s.* cole seed cropt, but fed and for pasture 4*d.* per acre. They had a composition by decree, of 7*s.* 6*d.* for every common right previous to enclosure, and therefore they would not go to parliament on any other condition. Cottagers.—The enclosures have been beneficial by giving a very great increase of employment. On the 3440 acres there was nothing worth attention. In 1667 there was a decree obtained for setting out nine acres of mowing ground to each commonable house, thus they were able to keep their cows in winter as well as summer, and they paid about 5*l.* per cow. There were about twenty families or dairy men, who made an entire livelihood, brought up their families decently; after the enclosure, they were reduced to day labour or to emigrate; these men were mere hirers, and had no common rights themselves, those who had are all greatly benefited to the amount of above 100. Expenses.—Part of the common sold, to the amount of 2600*l.* to defray the expenses of the act, and of the commissioners; the whole expense came to about 20*s.* an acre, roads included; rates nearly doubled; population increased." A. Y. Annals. v. 42.

Wimlington, also a member of Doddington. Common rights before enclosure let for 1*l.* allotments in lieu of it for 20*l.* Rents, advanced more than at March; cows decreased; quantity—800 acres, all open common, stinted like March; soil—black fen, about 50 rights of common; let before enclosure on an average at not more than 20*s.* each, fourteen acres on the enclosure for each right. Produce after enclosure, same as March; improvement greater than at March; lets for 30*s.* an acre, one with another. Expense, 1200*l.* for act, commissioners, surveyors, roads, &c. 2000*l.* banks, engines, drains, &c. &c. Laid a drainage tax not exceeding 20*s.* per acre; a banking tax, 7*s.* for the first two years, which sums were sufficient for engines, &c. &c. The mill—1400*l.*; banks and drains 600*l.* afterwards 3*s.* per acre for repairs of drains and banks; Tithes.—Oats 4*s.* wheat and cole cropt 5*s.* pasture 4*d.* the composition, previous to enclosing, 7*s.* each right; Cottagers,—the dairymen to the amount of ten families, lost their employment as at March. Rent: 300 acres let at 34*s.* for first four years, and at 22*s.* for next four, to be kept in grass; the landlord to pay all taxes."

Doddington.—"This rectory consists of 32,000 acres, including its appendages, March and Wimlington, just noticed. Of this rectory, Rev. Mr. Jobson, (then of March) thus writes, March 1794, to the Board of Agriculture. "Since the reign of Henry VIII. this living has been advanced from 22*l.* 10*s.* per year, to 2000*l.** effected by drainage and enclosure, which have advanced the commons in this parish and its appendages, in value from 2*s.* to 30*s.* per acre."

Little Wilbraham. Rents, doubled; rectory, much improved; no effect on population; more of all grains grown; sheep, as many as before enclosure, and of better quality; fewer cows. Before enclosure their own poor could not find sufficient employ; since, have employed more than their own. Common, before enclosure, of little value; two-thirds of it now worth 10*s.* per acre, one-third 20*s.* Expenses of enclosure about 30*s.* per acre; poor benefited; two acres of land allotted to each cottage. "Enclosed

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* Now at 3*s.* per acre 4800*l.* At what let, I was not informed.

1797, quantity 1970 acres, including a common of 469 acres. Rent before enclosure 680*l.*, now 1600*l.*; open-field arable before enclosure about 6*s.* per acre, and tithe gathered; now about 16*s.* and tithe free. Rates before enclosure 4*s.* per pound on the old rental. The last year they were on the new rental 2*s.* 2*d.*; this year they will be 4*s.* Given for tithe one-fifth of arable, nine-elevenths of the sward, they came to 323 acres, 323*l.*

Commissioners' valuation for tithe, and 435 acres of glebe;

Expenses.	£.	*s.*	*d.*
Solicitor	802	0	1
Surveyor	304	19	4½
Ditto for Board	56	7	2
Drainage	504	5	5
Ditto	74	4	9
Public fences	742	9	0
Ditto	70	0	0
Engineer	95	15	10
Roads	150	0	0
Commissioners, Dugmore £126 0 0 Watford 163 13 0 Stone 200 0 0	489	13	0
Contingencies	50	0	0
	£3339	14	7½

"Sheep. There were four flocks kept before enclosure, one of 400, and three of 200 each, todded thirteen or fourteen, miserably starved. Now 400 ewes in one, and about 600 in others, in all nearly the same as before, and tod nine or ten and far better kept. Cows not so many, but so much better kept that there is probably as much butter and cheese; 35 years ago, about 100 cows. Poor.—About 15 common rights were allowed, and 30 acres allotted for them, and a clause in the act which deserves great attention; it ordains that no person occupying twenty acres of land, shall over occupy a common right; if they should possess they cannot occupy it; by which this common right is secured for ever to the poor, let the rights be bought and sold as they may, it deserves universal imitation, but it did not go far enough. I viewed this common, and found it a wretched desert in the midst of the finest crops; the poor who occupy ought to have permission to take each one-fourth of an acre of potatoes, and one-fourth of an acre of wheat, paring and burning for the potatoes, and laying down with specified seeds amongst the wheat, by this method there would be every year, at fifteen rights, 3¾ acres potatoes, and 3¾ wheat, in all 7½ acres cropped, and 22¼ of grass, five or six acres of which grass, would be much more valuable than the whole thirty at present; now I counted but seven cows and a couple of asses on it; the other poor are too indigent to use their rights. I cannot but recommend the parish to lend 10*l.* to each of the remaining families (one per annum) to buy a cow, and to be repaid 20*s.* per annum. It would be a great assistance, and spread much comfort, and at the same time to assemble all having rights, and propose the culture each of one-half an acre of wheat. Population rather increased." A. Y. Annals, v. 43.

Great Wilbraham. Rents, doubled; vicarage, greatly improved; lay impropriation, injured. Expenses, about 23*s.* per acre. "Enclosed 1797; quantity, 2400 acres in the parish; improvement nearly equal to that of Little Wilbraham, except in fen; corn increased. Population increased.

“ Expenses.

	£.	s.	d.
“ Solicitor	816	16	2
Surveyor	390	2	10
Ditto Board	82	1	0
Drainage	231	13	1
Ditto	86	14	11½
Public fences	554	8	0
Engineer	95	15	10
Roads	200	0	0
Commissioners	486	13	0
Contingent	50	0	0
	£2994	4	10½

“ Fen improved by drainage so much, that what before enclosure let only at 2*s.* 6*d.* per acre, has been sold since at 25*l.* per acre. Fences. This enclosure was not fenced, only allotted in severalty.” A. Y. Annals, v. 43.

Little Swaffham or Swaffham Bulbeck. Rents much advanced; vicarage greatly improved; lay impropriator not benefited, expenses on buildings being too great. Fenlands advanced in value beyond any other.

Long-Stow. Where there is not a considerable quantity of common, enclosures do not answer. Fewer sheep kept; former *privileges* of the poor greater than the compensation given them; rectory improved; less arable land; rents doubled; expenses nearly 30*s.* per acre; population increased. “ Enclosed 1796; soil, poor stiff wet clay or gault; quantity, the whole parish including old enclosures, 1400 acres, 422 old enclosure, 200 common, 800 open field, arable total enclosed by act 1000 acres. Rent. Open arable before enclosed, about 6*s.* supposed to be worth now 16*s.* corn increased. Sheep, 800 kept before enclosure; since, between six and 700 sheep, cows lessened, three acres given for a right of two cows, and a budd, and ten sheep. Cottagers. Several who hired the cottages, that had common rights and kept cows, kept them no longer. Expenses. The whole expense of the measure, including fences, 1500*l.* or 30*s.* per acre; tithe, one-fifth of arable, one-eighth of grass, one-tenth of woodland; population increased." A. Y. Annals, v. 42.

Carlton. Rents increased nearly three-fold, a corn-rent, (the particulars of which I was not informed of) given in lieu of tithe, sheep increased, cottagers right improved four-fold. "Quantity. Whole parish 2100 acres, enclosed by the act 1100 open field, arable and heath, the latter 140 acres. Rent, one farm advanced from 160*l.* to 427*l.* taking the average of parish at 6*s.* before, now 16*s.* tithe free. Tithe. A corn rent given; sheep before enclosure in whole parish 400, one occupier (Rev. Mr. Lane) intends to keep 500 ewes. Corn will be increased very greatly. Poor, some of them before kept cows, not more than 10, they had an allotment in lieu, of two acres each, of the best land, and they plough it, thinking it more profitable than cows; they have gained much by it. Cottagers with rights which would have sold for 10*l.* now will sell for 50*l.*" A.Y. Annals, 43.

Elsworth. Rents doubled; rectory improved; expenses 20*s.* per acre, including fences, and roads, &c. &c. "Act passed 1800; soil, clay; quantity 3659 acres in the whole parish of which 1037 common."

Rent, valued in 1794.

	Acres.	*£.*	*s.*	*d.*
In-field open arable	1938	969	9	0
Out-field, ditto	250	62	11	0
North-meadow	14	8	10	0
Tithable meadow	163	163	0	0
Meadow compounded	54	68	0	0
Old enclosures	159	278	8	0
Wood closes	44	26	15	0
	2622	1576	13	0
Commons	1037			
	3659			

The in-field arable is let at 8*s.* to 10*s.* per acre, the outfield at half. Common rights.—Every plough has a common right of six horses, three beasts, and thirty-two sheep, on the lot grass common, whether mown or fed. The commonable right houses, eight sheep and three cows. There are sixty-two rights, but not more than two belong to real cottagers. Expenses.—The enclosure is put out to the solicitor of the bill, who is to pay commissioners 150*l.* each for time and expenses. Surveyor, 3*s.* per acre, including map, reduced map, attendance on commissioners, &c. &c. for all these and other expenses, he contracted at 10*s.* per acre, excepting the expenses of roads, bridges, drains, &c. &c. which are put under the management of five commissioners, named from amongst the inhabitants ; the expenses of these works it is supposed will amount to about 3*l.* per acre more. Sheep.—There are 110 score in the parish ; improvement, expected to be very great, the quality price is expected to be 18*s.* an acre. Tithe.—One-fifth of arable, one-ninth of pasture.

Connington. Here I met a formidable enemy to enclosures, the Rev. T. Brown, rector of this parish, retaining the opinion he gave in 1780 (see page 59.) He believes the proprietors of estates have not benefited 5 per cent per annum on the sums they have expended in enclosing, &c. &c. The gentleman who acts for a considerable part of the property in this parish spoke to me on the enclosure of it, in much more favorable terms. An advance of 10*s*. per acre rent, on the four-fifth left the proprietor, equal to 8*s*. per acre (on his former breadth), will pay 5 per cent. for 8*l*. per acre expenses on former breadth; now, heavy as the expenses are, they cannot surely exceed this sum, for supposing the expenses from outset of business to signing the award, to be

	£	s.	d.
per acre	£1	10	0
There remains for buildings, fences, &c.	6	10	0

The advance here assumed is much below that in most cases, (see chap. Rents.) The expenses assumed much more than those which from the preceding information appear to have been incurred. The greatest charge of enclosing I heard of was that made on Professor Harwood of Bartlow, namely, 3*l*. 19*s*. for enclosing one-half an acre; to make it palatable, the commissioners, he says, reminded him his land was made tithe-free; unfortunately for this observation it was so before. To return to Mr. Brown, his opinion on the subject of enclosures appears to have the merit of being disinterested; as his rectory is considerably improved by it, his allotment being worth as he informed me more to be let, than he could have let the tithe for before enclosure, or than they on an average of years paid him by occupying them. He thinks the poor more comfortable having an acre of land to each dwelling, and a general common. Expenses of enclosure 2000*l.* act passed 1800; quantity about 1500 acres, viz.

	Acres.
Open-field arable	981
Common-meadow	41
Lot-grass	93
Common	246
Old enclosures and town	104
	1465

Rent, open-field arable, about 7*s.* 6*d.* statute acre, will be 20*s.* Some convertable lands will be worth 30*s.* or 40*s.* Tithes. Now pay 4*s.* 6*d.* per acre, but commuted for at one-fifth of arable, one-eighth of sward. Sheep, 13 to every 20 acres. Mr. Brown conceives they will not be lessened. (N. B. in 1780 this gentleman thought they would decrease one-half, see page 59). Poor, have no commonable rights, only the farmers and the rector. Population increased. A. Y. Annals, 42.

Bottisham. Lay impropriator and vicar benefited, the latter very considerably; rents more than doubled; expenses about 23*s.* per acre; common rights worth before enclosure 20*l.* have sold since for 200*l.* On prospect of enclosing, fen land advanced six-fold; more sheep kept by twenty score, and better fed from the introduction of artificial grasses in lieu of dreary fallows.

Balsham. Rectory considerably improved, rents very much advanced.

Trumpington. Rents advanced two-fifths of old rents; no benefit to lay impropriators; vicarages improved at least two-fifths of former income; labour and products increased; one occupier (Mr. Treslove) keeps, and *well,* more sheep than were kept in the whole parish before enclosure; my informant here, spoke of enclosures in general in the county. A gentleman in this parish observed to me, that he thought enclosures *are* beneficial to vicars, and that they might be made so to others interested in them, if they were conducted in a different and less expensive manner than they generally are.

Westley. Mr. Wedge put this parish into severalty by consent of parties interested; expenses 30*l.* rental doubled; population not decreased, sheep fewer, but of better quality; corn more.

Sawston. Vicarage more than doubled, rents higher than I heard of in any parish in the county, of similar soil.

Milton. Rents and products very much increased. "Enclosed 1799, quantity 1300 acres, 230 of it common, the rest open-field. The rent was about 10*s.* will be 25*s.* to 30*s.* improvement in every respect will be great; the common will be well drained by a very small mill, and then ploughed." A. Y. Annals, 42.

Grantchester and Coton. Great and general improvement. "Quantity about 3000 acres of open-field arable, very little common. Rent will be 20*s.* to 25*s.* per acre." A. Y. Annals, v. 42.

Barrington. Enclosure answered well, tithes remain, expenses 3000*l.* on 2034 acres. "Enclosed 1796, quantity about 2500 acres. Rent before enclosure 5*s.* to 6*d.* now 20*s.* tithe taken in kind before and since; compounded for in a few cases at 4*s.* to 5*s.* per acre; common rights about 100, for each of which an acre was given, they were for three sheep and two cows, or five sheep and no cow; about half a dozen poor families had rights, and some were let at 5*s.* each to farmers; a green of fifteen or sixteen acres is left for the poor, for a pig or any thing else, except asses or geese; sheep fewer than before, cows fewer, corn hitherto less than before, and will be so for some time; but it is to be noted that Mr. Bandish's allotment of one third of the parish, lies much of it in a state of waste, and has done so for four years past; conceiving himself injured he refused to accept it, and this of course has had a very ill effect, for as attempts have been made to set aside the whole arrangement, it has given an ideal uncertainty to every man's possession, which could not fail to influence the husbandry." A. Y. Annals, v. 42.

Chatteris. "The act for enclosing part of the common of this parish, and keeping it in tillage for a given number of years, did not stipulate that the layer should remain long enough. Poor.—Their rights swept away by a clause in the act, requiring them to prove their rights, which they could not; an act for enclosing this whole parish talked of, no parish would pay better for it, having a fine and extensive common of excellent land, now of little value and in a miserable state, from weeds of every description, and from water." Poor.—A cottager's right, the run of two cows, a commonable right the run of six cows. The enclosure of the common of this parish has not answered, owing to the occupiers not being obliged to carry muck on to the part under tillage. When the act for perpetually ploughing the same common was obtained, three rights were bought by a gentleman, who has since sold them for 2180*l.* Rent.—This common has been let at 35*s.* per acre.

"In 1792 the price of each commonable messuage was about 110*l.* in general; and in consequence of an act of parliament six years ago, to enclose part of the common, an allotment of four acres to each house, and to plough about 1600 acres of the common, divided into allotments to 163 houses, the value of the property has been improved from 110*l.* to 700*l.* each messuage, and the parish thereby made exceedingly wealthy, and the poor have had much more regular employment. The Rev. Mr. Jobson is a proprietor, and speaks from his knowledge. "The act of regulation obtained 1773, &c. Tillage.—Applied to parliament in 1773 for powers to regulate the rights of commoners, and to enable them to plough their commons, especially the fenny parts, and then lay them down again open to commonage; they ploughed for four years and then laid down, and the experience was so favourable to the practice, that in 1783 they went again to parliament for fresh powers to extend the time of ploughing. In 1793 again to parliament to have a perpetual power to plough. There are 3000 acres of the fenny part; 1500, or about half, were broken up directly and ploughed for four years; the course: 1, Pare and burn for cole (some stands for seed). 2, Oats. 3, Oats, (some wheat). 4. Oats; but where the cole is seeded, there are only two crops of oats. Then laid down again for four years to grass, being then limited common, produce oats from 7 to 10 quarters, cole fed 50*s.* to £3. per acre. Seeded 8 Co. per acre. Improvements.—There are 163 houses enjoying common rights. Mr. Gardner has nine, which he lets for 35*s.* per acre, for nine acres ploughed, and 11*l.* or 12.. for the right of herbage; 27*l.* a right, so far as the common is concerned. Also 6*l.* a year for 3½ acres of a several fen, called acre-fen, and 10*l.* for the house or homestead, in all 40*l.* 10*s.* for each right; the rent of 27*l.* per right, on 163 common right houses, is 4401*l.* or something better than 20*s.* per acre, on the extent of the commons, which are stated at

3000 acres arable and grass alternately.
1320 always fed.
4320

The common rights have risen in value from 100*l.* to 500*l.* Comparison with enclosure;—whatever the benefit of enclosure may be in cases very different from this, and which my informant, Mr. Gardner, is not disposed to dispute, he contends that now at Chatteris there is no want of one, as he considers this system as much superior in some respects, particularly relating to the lower order of renters. These men at present have a business which enables them to bring up their families decently, by means which secure a very large produce of corn, &c. to the public; but under an enclosure they would be turned adrift, and their farms thrown together, as has taken place so often. There are no unstinted commons, they plough as others, and all is converted to profit. They are not troubled with the rot, for the act provides for draining, gripping, mowing thistles, &c. &c. and providing for grass-seeds for laying the land after the arable course, that all may be done alike; enclosure could not, he observes, render a place more flourishing than this, as the people increase and are comfortable, new houses are every year built, and the tradesmen and farmers are wealthy. Limitation on feeding.—This is on the running out common, either forty-eight sheep, or twelve beasts, or six horses, or twelve asses. On the cow-pasture, five cows or heifers. Cows.—Before the act passed there were about 1000. The rights now admit 744, and twenty-four bulls. There is no doubt but the number is considerably lessened by ploughing. Sheep, lessened. What are kept, todd fives." A. Y. Annals, v. 42.

Knapwell. "Enclosed 1775, quantity 1100 acres. Soil—clay; rent, before enclosure,—5*s.* three roods. In 1791 it was 10*s.* Now on an average 13*s.* Tithe-free; expenses—about 4*l.* per acre, did not answer so well as expected. Sheep, more kept before than since, and the breed but little improved. There used to be about forty score, now about twenty. Cows, forty or fifty before, half as many now. Corn, their crops of some sorts better than before, but the improvement is not supposed to have been so great as it ought to have been, and no wonder, as they cultivate the land nearly as before enclosed. Fences, are very fine quicks nine or ten feet high; probably this strong land is too much shaded, and kept from the free play of the wind. Improvement, by hollow draining, or clover seed. Rates three or four years ago, only 2*s.* in the pound, and not much higher at present. Population decreased." A. Y. Annals, v. 42.

Whaddon. This parish has had all the benefit of an enclosure without its expense. Lord Hardwicke, the sole proprietor, some years ago, having laid the farms together, and the tenants having drained their lands in a masterly way, which they were enabled to do by his lordship having also made open drains, &c. at a great expense; this step, followed by a judicious and spirited change of husbandry, (particularly on the farm of Mr. Beaumont) has wrought a great improvement, doubtless to the advantage of all parties. Sheep increased, and improved in quality. Mr. Young (Annals, v. 42) observes, "This system of allotting lands to farms for convenience and contiguity, is in many cases preferable to dividing wet soils by high hedges, which prevent the play of sun and wind to dry the land and corn in ticklish harvests. Mr. Beaumont had no objection to make in comparison with enclosures, except the expense of hurdles, which amounts upon his farm of 300 acres, to about 20*l.* per year; call this 1*s.* 6*d.* per acre, and it may be conceived that the loss by high hedges would equal it.* However such hedges are not necessarily the consequence of enclosing, and certainly in many cases the land would be much better without them. Population increased. Poor.—There are two small commons to the amount of 30 acres, inter-commonage, with another parish; now Whaddon takes one; this is not enclosed, only drained, and Lord Hardwicke, with that humanity which characterizes all his actions, has assigned eight acres of the best land in the parish, to three poor families for their cows.

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* The loss by hedges and ditches in enclosed heavy lands, is estimated

Chippenham. Act passed 1791; soil, light and sandy on a chalky bottom, and good marly white land; quantity in parish 4040 acres, of which

Mr. Tharp's park contains	350	4040
Fen	300	
Small occupations	20	
Seven farms from 300 to 700 acres each	3370	

Of which 2240 open-field arable enclosed by act. Rent of parish, before enclosure, 1300*l.* after, 2000*l.* and farmers now flourishing. Fen.—This before Mr. Tharp's improvement was constantly flooded; when fed, it was with cows and young stock to little profit: formerly there was a mill for draining, but it decayed, and the whole the residence of snipes, wild ducks, and herons; cows and horses mired and lost, and their skeletons found when the drains were cut. By Mr. Tharp's effective draining the mill proved to be unnecessary, for a fall of five feet was gained; the copyholders fed it and made nothing, their allotments now

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estimated generally at one-tenth, on Mr. B.'s farm, therefore, (if this deduction be correct) it would be thirty acres of much more than 20*s*. value. I think the fences alone are a charge of at least 1*s*. 6*d*. per acre on most farms; the tenant having also to pay rent for the land which they occupy.

let at 20*s.* per acre. I viewed this drainage and cultivation with great pleasure; the cuts are numerous and deep. Powerful springs cut into, and the water conveyed away,and running now, (August, 1800) after a long drought, a good stream. Plantations formed. Paring and burning, and cropping, and every thing looking well and thriving. A farmer had a part of this fen, that was not common, which he offered at 2*s.* per acre, for which he would now give 20*s.* Sheep—before enclosing there were 2000 kept or rather starved, dying almost every winter by scores, todding fourteen to eighteen to a tod; now there are 2160 that tod tens, 400 are now fattened annually; before none, except a few crones for harvest; on the whole, not one-fourth of the produce from sheep which there is at present. The breed Norfolks, except Mr. Tharp's, whose flock is South-Downs, and he has some very good ones. Some half-breds with Leicester are mixed; which he intends weeding out, as they do not answer. Cows—certainly fewer kept now; there used to be sixty or eighty, now thirty; it is, however, a question whether there is any real defalcation in this article; as before they produced little. One respectable occupier assured me that he kept eighteen,and was forced sometimes to buy butter for his family's use, which he never does at present, keeping only four.—Bullocks before the enclosure none, now forty are fattened annually. Poor.—The only benefit the poor derive from the common-fen was to cut turf on it, for which use forty acres are allowed them. The cattle were the farmer's. Rates doubled, but this, as every one knows, depends on other circumstances; militia men's wives,and increase of population—increased very much. The number to whom a charitable donation is given, is doubled in ten years; and there are twenty new houses built in the last seven. This astonishing increase of population must not, however, be attributed to the enclosure; the residence of a man of very large fortune must have had in this respect a much greater effect; but from this a conclusion of no slight importance is to be drawn, that there is a vast difference to the population of the kingdom between an income spent in London, or in the country; in the latter here is an instance how much it favours the population of the vicinity: at London it may and certainly has *some* effect, but probably to a degree extremely inferior, and it may be there so spent as to injure population. Every shilling that promotes vice is prejudicial in this respect, and it is too often found that the accumulation of people, is an accumulation of profligacy. Tithes.—Mr. Tharp has the whole parish and the great tithes. The vicarial remain as they were." A. Y. Annals, v. 43.

The present state of this parish (1806) I found such as might be expected from this account of Mr. Young's; in short it is not possible perhaps to find an instance of such improvement in the value of property, or a farm, the management of which does so much credit to the director of it (Mr. Shepherd), as Mr. Tharp's. Crops large. Sheep (South Downs)—unrivalled in the county. Layers—capital. Land improving; the whole arrangement masterly.

Harston. The Rev. Mr. Leworthy (a modern, skilful, and spirited farmer) of this parish, thinks enclosures benefit vicars, but that they injure lay impropriators; he thinks one fifth of arable, (the usual compensation for tithes), not adequate to their value; he thinks (and could prove) that the tithes of this parish before enclosure, were worth as much as the *then* rent, viz. 10*s.* per acre. Poor.—In this parish an acre of land was allotted to each cottage, but as most of the cottages belonged to the owners of the large estates, they laid the land to them instead of attaching it to the cottages; but where the cottages were the property of the occupiers of them, many have been sold or let; Mr L. thinks that instead of granting to a cottager his full due, subject to the expenses of enclosure, he should have a less quantity, free of expense and properly fenced in, and money to enter upon his occupation; for under the present system they mortgage to great disadvantage. Mr. L. does not think land that advantage to a cottager, which it is generally supposed to be; the farmer will not assist him with horses, &c. he has therefore ploughing, &c. to pay for at the dearest rate; and few of them have proper buildings for their crops. Poor allotments in this parish have sold for 50*l.* per acre, the purchaser paying expense of enclosing. This parish and Hauxton were enclosed under one act. Expenses, 4620*l* on 1960 acres, of which expense 150*l.* were for public drains, 780*l.* for public fences. Tithes.—The vicar of one of these parishes was allowed one fourth of the one-fifth granted for great and small tithe of arable land, and that proportion was stipulated for in the act. The vicarage was consequently greatly benefited, and the lay impropriation much injured. The vicar proposed to let his tithes remain rather than accept even at this rate for a compensation.

Abington Pigots. "Enclosed 1770. Quantity 1000 acres, of which a common of eighty acres. Soil, clay; but being on adjoining parish of chalk, partakes of a calcareous disposition and colour. Rent—before enclosure at 7*s.* quality price 16*s.* now raised to 20*s.* Course—the same as before enclosure, an extraordinary fact; corn—increased; sheep—much the same; cows—greatly lessened. Poor.—A very bad and melancholy account; before the enclosure they had no rates, and were forced to find out an old woman to take 6d. a week, in order to escape being rated in aid of other parishes, but since enclosing the rates have gradually risen to 2*s.*, 2*s.* 4*d.* and 2*s.* 6*d.* in the pound, on the new rents; formerly every poor man had a cow, some by right, others by permission; on the enclosure the whole parish belonged to one person, the rights had allotments assigned them, and were thrown to the farms. Tithes—Commuted at 90 guineas (in 1770)." A. Y. Annals, v.42.

Morden-Guilden. "Act passed 1799. Quantity about 3000 acres, at three roods per acre, of which about 200 common and waste; old enclosures about 100 acres; rent 7*s.* will be doubled. Tithe, paid in kind; rates, in 1774, 2*s.* 6*d.* in pound, in 1787, 4*s.* 9*d.* in pound. Common rights—these are 191, some cottages have a right to keep one cow, some two, some three. Some farmers have six of these rights. They winter their own labourer's cows in the straw yard for 6*d.* a week, instead of the real value 1*s.* 6*d.* The rights will receive allotments, these thrown together to the respective proprietors, and there will be an end of cow-keeping amongst the poor, as in the neighbouring parish of Abington-Pigots. The poor are therefore greatly alarmed, and view the steps taken for enclosure with terror. When an evil could so easily be prevented, and enclosure converted to their advantage, as well as to that of every other class, it is to be lamented that measures are not taken with this view. Sheep, about 1200 kept at present, Cows, about 100 kept. Population increased." A. Y. Annals, v. 42.

The expenses of enclosing this parish were 4,404*l.* on 2,508 acres,

Cambridge, St. Giles. Expenses 3,250*l.* on 1360 acres. Sir Charles Cotton was at the expense of 700*l.* on 125 acres in this parish, the cost of fences included; the fields are about twenty acres each; Sir Charles advanced six per cent. on the expenses incurred by enclosing and fencing. The expenses stated in the preceding instances are those incurred from the outset of the business to the signing of the award, and may be termed the public expenses of the measure, in opposition to the private ones which individuals, landlords, must also experience; such as fences and buildings, the former if done as the public ones have been, are a heavy charge; and the latter in many instances, such as an outward allotment, are much more so, and yet it appears from the preceding observations on Connington, the advantage is equivalent to them, assuming a moderate advance and large expenses. The fences on the new enclosures, cost 36*s*., 42*s*., 44*s*. per chain, of four rods; they consist of some two, some three rails on each side a bank (there is no ditch, only a slope) on which is set a double row of quick; if two rails the price is 36*s*. if three 42*s*. to 44*s*. The reader will have observed that an increase of produce in corn is stated in most of the parishes here mentioned, but in some of them the degree is not mentioned. I made this inquiry generally, and found the prevailing opinion to be about a fourth of former produce; now supposing the average produce of the open field of the county to be per acre, wheat, 5 Co.; barley and beans, 6 Co.; pease, 5 Co.; the produce on these lands when enclosed must be, of wheat, 6 c. 1 b.; barley, 7 c. 2 b.; beans, 7 c. 2 b.; pease, 6 c. 1 b.; Mr. Vancouver writes, the average produce of enclosed lands, exceeds that of open field, taking the whole county, as under, wheat, 3 b. 1 p.; rye, 3 b.; barley, 15 b. 1 p. oats, 1 b. 1 p.; pease, 2 b. 1 p.; but if a single instance be adverted to, and a comparison made between the parish of Childersley which is enclosed, and Hardwicke which is open; and which parishes consist of perfectly similar soils, and are divided only by a hedge-row, the excess of the produce in favour of the enclosed will appear infinitely more abundant.

Wheat

	Childersley enclosed.		Hardwiche open.		Excess of Produce.	
	c.	b.	c.	b.	c.	b.
Wheat	6	0	4	0	2	0
Barley	9	0	4	2	4	2
Oats	9	0	4	2	4	2
Pease and beans	5	0	2	0	3	0

It may perhaps be said, that if the open-field course be abandoned, and the Norfolk one (which is recommended) be adopted, although one fourth per acre more will be grown, it being only on half the breadth instead of on two-thirds, less corn will on the whole be produced; in answer the opinion is, that the half will produce a fourth more than the two-thirds, from the introduction of artificial grasses and turnips, &c. &c. to do so, the half must exceed the former produce on the two-thirds in the degree shewn by the following statement; thus

		c.	b.	p.
One acre open field,	Fallow produce	0	0	0
	Wheat, ditto	5	0	0
	Barley, ditto	6	0	0
	In three years)	11	0	0
	per year	3	2	2
	Say	3	3	0
Add one-fourth, which it is supposed will be grown on these lands, in addition, in consequence of enclosure		0	3	3
	Total	4	2	3

The future annual produce will then be after enclosure 4 c. 2 b. 3 p. per acre; now to obtain this under the Norfolk system, the produce must be in four years, 18 c. 3 b. which perhaps may be apportioned thus:

	c.	b.	p.
Fallow, (turnips)	0	0	0
Barley	11	3	0
Clover	0	0	0
Wheat	7	0	0
In four years)	18	3	0
Per year	4	2	3 as above.

That these products will be grown, many may doubt, but that the new rents and present expenses require them, none will; for assuming (for a lease of fourteen years) 15*s.* as an average price per Co. for barley, and 30*s.* for wheat, and the value of clover to be consumed on the premises 50*s.* (it ought not to be set at more, when the frequent failings and the profit on its application, depending on markets, &c. &c. are considered) the value of these products will be per acre per annum, 5*l.* 11*s.* 6¾*d.* thus,

	£.	*s.*	*d.*
Fallow	0	0	0
Barley 11 Co. 3 b. at 15*s.* per Co. ..	9	6	3
Clover, value on farm	2	10	0
Wheat, 7 Co. at 30*s.*	10	10	0
In four years	22	6	3
Per year	5	11	6¾

The communications cited appear to warrant the conclusion that enclosures benefit private property (in fee-simple) and church preferment; but that the advantage to lay impropriations is doubtful; this subject requires consideration. For every five acres of great and small tithes of arable land, one acre of it has been given as a compensation. This acre has been variously apportioned; taking it for granted that the division which was acceded to by the respective parties in the parish of Bottisham, (and which division made a part of that act,) was fair, it may perhaps be taken as a datum on which to calculate. In that parish nine-tenths of the acre were given for the great-tithes, and one-tenth for the small tithes; hence the nine-tenths ought to be of the same annual value, as the great tithes of the five acres before enclosure; now these were stated to me to be 3*s*. 4*d*., 4*s*., 4*s*. 8*d*. and 5*s*. 4*d*. per statute acre, therefore the great tithes of five acres, at these rates amounted respectively to 16*s*. 8*d*., 1*l*., 1*l*. 3*s*. 4*d*. and 1*l*. 6*s*. 8*d*.; nine-tenths of the acre must in consequence be of the annual value of these several sums taken separately; to be so, the land must be worth per acre; 1*l*. 2*s*. 2½*d*. 1*l*. 5*s*. 11*d*. and 1*l*. 9*s*. 7½*d*. for if from each of these sums be deducted one-tenth of them; the remainders will be equal to the former tithes of five acres. The average tithes before enclosure at the rates here stated, will be found to be 4*s*. 4*d*. per statute acre, and the average rent here stated also 24*s*. per acre, and they are equivalent to each other; thus,

	£.	s.	d.
Five acres of tithe at 4*s*. 4*d*. per acre	1	1	8
Nine-tenths of an acre of land, at 24*s*. per acre (barring a fraction)	1	1	8

Next let us compare the proprietor's former profit, supposing him to have *occupied* the tithes, and that which he will probably reap from the *occupation* of the land given him in lieu of them, with the result indeed of which comparison, it may be said neither the commissioners of enclosure nor the public have any concern; (they have only to consider the value to be let), it does not however on that account, the less affect the individual. Upon making a calculation with a renter of tithes in the county (a man of judgment and integrity), we made a probable profit of 2*s*. 2*d*. per acre,[*] by the occupation of tithes,

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[*] Thus :

Dr. One acre of tithes gathered.			Cr.					
	s.	d.						
To rent	4	4	By one-tenth of annual pro-				s.	d.
Rates 5*s*. in pound on			duce of one acre .				9	0
4*s*. 4*d*. say on 5*s*.	1	3		£	s.	d.		
Gathering	1	0	viz. Fallow	0	0	0		
Carting to market 2 bu.			Wheat 5½ Co.at 30*s*.	8	5	0		
at 6*d*. per Co.	3	0	Barley 7 Co.at 15*s*.	5	5	0		
	6	10	In 3 years	13	10	0		
Balance, profit	2	2	Per year 10)	4	10	0		
	9	0	Tithe	0	9	0		
							9	0

N.B. No charge is made for threshing, as the straw is not valued in the produce. The product and expenses were fixed by the gentleman who assisted me in the calculation. The charge of 1*s*. per acre gathering is made, that being the annual charge, 1*s*. 6*d*. being the charge on the two-thirds usually cropt.

That 1*s*. 6*d*. per acre on the land cropt, is expended in gathering tithes in this county, was thus shewn to me by a tithe-gatherer.

debiting the account with 4s. 4d. rent, (the average as above stated) this consequently is equal to 10s. 10d. on five acres of tithes; now the probable profit on the occupation of nine-tenths of an acre of land given in the lieu of five acres of tithes, debiting it 24s. per acre, (the above average) rent, (equal to 4s. 4d. former tithes), cannot be presumed to prove more than 12s. 7d. equal to 14s. per acre, that is, 10 per cent, (in addition to common interest), on a capital of 7l. per acre. The question then is, whether this extra profit by the occupation of the land, is sufficient to meet the expenses to which the proprietor must be put in buildings which will be necessary to occupy the land? Another material consideration is, that the property in question (lay impropriations) is granted in general for twenty-one years, the expenses therefore must be calculated on that number of years, or on such part of it as

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therer. Suppose the extent, crop and fallow, 1000 acres, and two-thirds annually cropt (the usual practice) viz. 666 acres, call it 670 acres, the expense of gathering would be 1s. 6d. per acre, on these 670 acres, thus:

	£.	s.	d.	
Three tithing men, at 5s. each per day	0	15	0	including beer, &c.
Three carters at ditto	0	15	0	
Four pitchers and stacking men, at ditto	1	0	0	
Three waggons and six horses at 10s. each waggon and two horses per day	1	10	0	
Expences per day	4	0	0	
Continues about 12 days	12	0	0	
	48	0	0	
Incidentals	2	5	0	
Total	50	5	0	

on 670 acres, is 1s. 6d. per acre.

culated

the lease may have to run, as the proprietor's interest in it may then be at an end; under these circumstances would it be advisable to lay out any considerable sum? The requisite one is perhaps only the cost of a barn, stable, &c and a cottage, if it be farmed, "off hand," otherwise much more. Is it not probable that the fine on renewal would increase in proportion to the money expended in buildings, as well as in proportion to the improvement made on the land. Suppose the proprietor to let, and that his former tithes were 4*s.* 4*d.* per acre, he must do it at 24*s.* per acre, to have an equivalent, and he must also obtain an additional rent, equal to the interest on capital sunk in buildings. Query. What interest should be obtained on money laid out upon estates of this nature? It is to be feared, such as will require a large rent. It appears that the following (as far as we have compared them) are equivalent to each other.

	£.	*s.*	*d.*		£.	*s.*	*d.*
Land worth to be let	0	18	6	to a former tithe of	0	3	4
Ditto	1	2	2½	to ditto	0	4	0
Ditto	1	5	11	to ditto	0	4	8
Ditto	1	9	7½	to ditto	0	5	4

Mr. Bunn of Burwell, thinks the present rent of the great tithes is more than the rent of the allotment would be, unless the fen were added; Mr. Jonathan Page of Ely, Mr. Cooper of Islesham, Mr. Hart of Swaffham, think directly the contrary; these gentlemen are all renters of great tithes in their respective parishes. Having regard then to advantage by giving tithe of arable land for land, it may be doubted whether there be any great inducement to lay impropriators to go into enclosure, unless allotment should be let at a very high rate; but where there are pasture and fen, (as well as arable), place his allowance for these to the account, and he may perhaps on the whole have a handsome compensation; of pasture there is generally, I am told, given the lay impropriator three-fourths of an acre for eight acres of tithes; of fen, three-fourths of an acre for nine acres of tithes, viz. for great and small tithes are given one-eighth of pasture, and one-ninth of fen; out of these the vicar has one-fourth. It should also be remembered that many allotments of arable of similar quality to those we have been calculating upon, as averaging 24*s*. per acre, to render an equivalent for tithes, have been let since enclosure, from 25*s*., 30*s*., 35*s*. &c. &c. per acre, whether a sufficient quantity to give a larger average than 24*s*. may be doubted.

Mr. Darnton, of Babraham, thinks that laying lands into severalty, is preferable to enclosing them by fences, the expenses of which he thinks greater than the advantage. Mr. C. Pemberton, of Cambridge, has found cottagers much benefited, and their comfort greatly promoted, by land being let to them; he has let from three to five acres to each, and on rent day they meet him with chearfulness and gratitude, their money in their hand. This gentleman advises the allotment to the poor under an enclosure, to consist of a general common for their cows; a piece of pasture to mow, and a piece of arable, thus the cow will be provided for in winter, as well as in summer.

Mr. A. Young writes, (Annals, v.43). "Cottenham in Cambridgeshire has very extensive fens, some thousand acres which are constantly under water in winter. They have 1500 cows, besides dry stock and horses, they mow, sedge, &c. for winter, and hire land at a distance. The rights of keeping several cows, (five or six the informant thought), lets at 9*l*. per year, this shews the real value of these commons in their present state, yet a surveyor would be knocked on the head, that went there with a view to enclose." "At Waterbeach are three commons of 2500 acres, and at Landbeach 1500 more; they call loudly for enclosing, and proposals have been made to the rector and Bishop of Ely, but without success.

Mr. Vancouver writes, "the laying the intermixed property together, and in severalty and enclosing, appear to be indispensably necessary, as previous steps to the general improvement of the highland part of the county. To this measure, a few have given unqualified *dissent*, but they were flock-masters; others have concurred under certain limitations; but the mass of the farmers are directly for the measure. Mr. Vancouver attributes the disappearance of the rot in the sheep, in enclosed parishes in this county, to the effects of enclosure; he says the rot has "desolated the sheep-walks in most of the neighbouring parishes, whilst in Childersley and Knapwell, (both of which are enclosed) not the least shadow of the disease has made its appearance." As to the effects of enclosure on population, and the condition of the poor, I found the more general opinion to be, that they were favourable to both, and the extracts I have made from Mr. A. Young, who appears to have given this subject his particular attention, warrant this conclusion. In short this measure has so great a majority in its favour, that it may safely be taken for granted it has advantages, else how account for its rapid progress under the general cry of too large, and the equally general opinion of unnecessary expenses. There is no doubt were the expenses reduced, and expedition in the execution of the business secured to the concerned, all objections to enclosures would vanish, and the measure would become general.

neral. The expenses and delay, notwithstanding they be in the end repaid, do not sit easy, not only from their weight, but from the idea that they are unnecessary. Lest gentlemen, solicitors, commissioners, &c. &c. should imagine I mean to cast a reflection on them, I beg to disclaim any such intention, I only (as is incumbent on me in the execution of this work), faithfully report what I heard in the county; I am no judge of their charges, and do not therefore presume to give any opinion on them; I am equally ignorant of the justice of the complaint on the score of delay, and therefore do not censure it; I have greater pleasure in testifying that as a lay impropriator under an enclosure in the county, I have no reason to join in the complaints I have represented as being general in the county on this subject; on the contrary, I have no doubt, but the parish I have alluded to, the practice of the solicitor and commissioners, (Messrs. Pemberton, Dugmore, Stone, and Treslove), was such as became gentlemen of their ability and respectability.

CHAP. VII.

SECT. I.—TILLAGE.

PLOUGHING is done on light soils and in the fens by two, and in some instances in the latter, by three horses abreast; on heavy soils (up-lands) by three and sometimes by four horses at length. When more than two horses at length are used, a boy is also employed to drive them. From three-fourths of an acre to an acre is a day's work in the uplands; and one and a half acre in the fen. They plough very fleet; deep ploughing is reckoned destructive to "white lands." Lord Hardwicke, however, has tried it on them, and found no evil from bringing up the gault, (the substratum of these lands).

Harrowing and rolling Nothing peculiar in the method of performing these operations, except that in the fens rolling is often done by the roller being drawn by a boy and pushed by a man, expense *6d* per acre; in harrowing the boy generally leads the horses instead of driving them. Ridges.—The lands for wheat are generally laid on four furrow ridges; for soft corn, on stetches of various sizes, generally about two rods, on stiff soils the stetches are "upset," which, says Mr. A. Young, (Annals, v. 4. p. 139), "is the most excellent way of all others of laying wet soils dry, if the furrows are kept free from water." A singular opinion for a Suffolk farmer: I should add he gave it thirty-one years ago. Stetches are said to be upset when they are considerably higher in the middle of them than in the furrows; this form is for the purpose of surface draining, the furrows being intended for conductors of the water; one effect is visible, that is, too much straw on top of stetch, and neither straw nor corn on the sides. An opinion prevails that levelling these stetches, (which are also called " high backs,") even after ditching, enclosing and draining, would be injurious, as the tops (now a deep soil,) would become thin and poor. Mr. Leworthy's (of Hauxton) lands were all " high backs," they are now level, and he found only a temporary injury. The fens are always ploughed level. Mr. Wedge, of Wesley-Bottom, (on a very light soil), has his stetches contain an acre, for the more easily seeing if his men have done a day's work.

SECT. II.—FALLOWING,

Is practised through the county with very few exceptions, which are on what is called (in consequence of such exemptions perhaps) " every year land." The fallow has four earths, viz. at Lady day, Midsummer, after harvest, and seed earth; harrowing and rolling are mostly given after each earth, if the land be cloddy.

Sir Charles Cotton's steward, (a Suffolk farmer), thinks fallows necessary at Madinglay. Although they break up whole and hard, they slake and become moulds, upon the first rain. Mr. Francis, of Childersley, is of the same opinion. His fallows are often *hoed* before the first ploughing

ing them ; never ploughs any thistles, &c. &c. in ; ploughs first time in spring, or so late as May. Mr. Wedd of Trumpington thinks fallow should lay whole all winter, even if intended for turnips, and that the first ploughing should not be later than May. Dr. Nasmith says, " fallows are very sparingly introduced in the Soham husbandry. I believe on an average not so often as one year in six ; hence their crops are remarkably foul. The soil is the best in the district, and the husbandry the worst." Mr. Scott, of Chatteris, calls fallowing a " barbarous system ;" and that the best crops are produced where it does not exist ; viz. where the course is beans, wheat, and barley, (see Chap. on Course of Cropping.) Rev. Mr. Leworthy, of Hauxton, never fallows, and gets better crops than those who do. Mr. Lawton, of Wisbech, gives the first ploughing to his fallows before Christmas, gives seven or eight earths more, says he cannot plough too much, and lays on manure about Midsummer. Mr. Edes of Wisbech also, gives the first ploughing immediately after wheat sowing, and lays his land on the ridge. I met many fen farmers who were against fallowing their lands, because it made them " too light," there are, however, many who say that objection does not exist. Mr. Darnton, of Babraham, gives the first earth between Michaelmas and Christmas, contrary to the usual custom of giving it after barley sowing. Many would give the first earth in autumn, were it not for the winter-feed, which they would lose by it, and which feed they reckon valuable. Mr. Lane, of Carlton, gives the first earth in autumn ; upon my observing that the autumn ploughing would assist in destroying the black grass they answered, " We don't mind black grass." No experiment on the subject on this chapter.

SECT. III.—COURSE OF CROPS.

1st, *In open field.*

THE common open-field course is fallow, wheat, barley; upon the stronger and more valuable soils, and where pease and beans are cultivated, the following courses are observed, (preceded by a fallow, with the exceptions noted).

At Wichin—Wheat, barley, barley.

At Soham—Wheat, barley, beans or pease; or wheat, beans, wheat, beans.

At Ely—Wheat, barley, beans and pease, barley; or wheat, beans, wheat, beans.

At Chatteris—Beans, wheat, barley.

At Waterbech At Stretham At Over	Wheat, beans, barley, or wheat, barley with clover, then "bastard fallow;" or wheat, barley, beans, wheat.

At Littleport—Wheat, barley, beans, barley or wheat, beans, barley.

At Mepal—Wheat, barley, beans.

Mr. Young (in his Annals) confirms my notes on the cropping of the above parishes, and reports the following.

"At Fulburne—Wheat, beans, or pease.

"Two or three miles south of Ely—Wheat, beans, barley."

Eversden and Kingston—Wheat or barley, then oats or beans. Again, barley, grasses, mown 1st year, fed 2d year, then wheat.

At Upwell, &c.—Flax, wheat, hemp, wheat.

At

At Whittlesea At Witcham At Haddenham	Beans, wheat, barley, barley, some potatoes instead of barley or beans.

Foreign as these courses are to every idea of modern farming, and clearly as they carry their own condemnation with them by their products, there are numbers of farmers who still retain the opinion that the lands will not in future be made more productive by the introduction of turnips and seeds; in spite of this opinion, however, rents are advancing, so as to warrant the conclusion that the hirers expect much greater produce by some process or other; and that merely laying each one's occupation together will obtain it, is not easily to be believed. Under the field-system it is almost universally allowed the lands are impoverishing; Mr. Wedd, of Trumpington, nevertheless is of opinion, that the "present mode of cultivating the county is very good and suitable to the soil." Surely the acreable produce from the present field-system warrants a suspicion of its defectiveness. If the adoption of courses of crops in which turnips and artificial grasses may be introduced, do not give a greater produce than hitherto, a lamentable disappointment will ensue where enclosures have taken place. *What* course of cropping should be adopted, the skilful will soon discover; that it should *not* be the modern and improved one of *Suffolk*, (called the Norfolk husbandry) I found some Cambridgeshire farmers of opinion. To give two instances. I accompanied one over the lands of three as modern farmers as any in Suffolk, and of as high repute; he was told their system, and the expected produce from the crops he was shewn; he appeared to think they dealt in the marvellous, and returned home with as high an opinion of his own husbandry (the common field) as with theirs. The farm of this gentleman (well managed, admitting the system good) afforded a striking proof that some defect existed in his plan of cropping; for, with an appearance of corn crops when I saw them (in the grass) that would cause a Suffolk farmer to expect 10 Co. per acre of wheat, he expected, he told me, (and he was a clergyman) little more than half that quantity. Another Cambridgeshire gentleman, (a land valuer, &c. &c.) was lately in the centre of Suffolk, and pronounced a man who is there esteemed a remarkably good farmer, a very bad one; such is the force of prejudice or attachment to practices of early life.

In enclosed uplands, and uplands in severalty.

The Norfolk system (turnips, barley, clover, wheat,) is practised on many of the turnip soils of the newly enclosed lands, and on those newly laid into severalty, and with great success, from the abundant crops of artificial grasses (chiefly red and white clover, and trefoil). These plants are largely cultivated since enclosing, though not always in the Norfolk routine, and have justified the expectations entertained of them. I met, however, a few instances of the open field course having been retained since enclosing. The Rev. T. Brown, of Connington, though he has varied a little from it in his practice, believes no other can be adopted which will grow more corn; his field course was 1st, fallow; 2d, wheat or barley; 3d, oats or beans. This gentleman does not look upon clover as any acquisition on the new enclosures (soils similar to his); he grows, indeed, a little for sheep feed. His course since enclosing; 1st, fallow; 2d, wheat; 3d, tares; 4th, barley; 5th, beans, (with clover for sheep feed, which must be off in the following spring, in time for making the fallow for) 6th, wheat. Mr. Brown thinks clover, beggars lands, and encourages twitch. I found others in the county of the same opinion. If it stand for two years, (as it often does) it then goes off, and is succeeded by twitch; but if it stand for one year it will prevent twitch.

Mr. Wedge, of Westley, whose lands are in severalty, crops thus: turnips, barley with seeds (red and white clover, and trefoil) for two years, wheat, barley or pease, or tares, fed by folding a piece at a time, then wheat; his first course after paring and burning his heath, is wheat, turnips, layer without a crop, to continue, the seeds,red clover, Dutch clover,trefoil,and hay-seeds; mows, apart the first year, and feeds a part by folding a piece at a time; intends the next year it should stand till the seeds will shed,then to feed it with sheep. Sows his layer just before barley sowing, but recommends after that time, as there is danger of frost in the former season. Mr. Wedge has also had the following course. " Pare and burn, wheat, turnips, barley and seeds two years, wheat, turnips, barley; and this course he contends is the best of all, and founds his opinion on experiment and observation; he has remarked that the ashes work much greater improvement when they lie spread for some time before ploughing in. In his wheat crop this year there are three preparations; first, pared and burnt in the spring 1799, and the ashes left spread and exposed to the weather till wheat sowing; second, pared and burnt late, and the ashes left in heaps till wheat sowing, and spread before the plough; third, pared and left so from the season preventing burning. The crop varies greatly, the best by far is No. 1, the next best No. 2; and No. 3, is in comparison so inferior as to shew the immense consequence of burning. Hence he concludes it is much better to leave the ashes much longer than can be done if turnips be the first crop, but he further remarks that the turnips after the wheat are much superior to what they are on one earth after burning, which he attributes not only to the ashes being turned in too soon, but to a deficiency of tillage for that root; and as a great crop of turnips is of much consequence, whatever the system, he thinks that the means of securing one, ought in the first instance to be attended to." (Annals, vol. 40. A. Y.) The more general practice in Mr. Wedge's neighbourhood, on the late sheep walks, is, pare and burn, and take as much corn, and as quickly as possible.

In Carlton—(Rev. Mr. Lane), turnips, barley, tares, barley, or pare and burn—turnips, barley, barley. N.B. Second barley good; or, tares cut or fed, turnips, barley, clover, wheat. Mr. Lane finds clover more certain after the second barley, than after the first.

Coton—Mr. Casborne, tares, wheat, tares, barley, clover, wheat; if clover fail, substitutes beans or pease.

At Elm—Flax, turnips, (same year) or cole fed, oats, wheat; or flax or oats, if flax then turnips or cole fed; oats, wheat, cole-seed, beans, hemp, or oats.

Leverington and Parsondrove—Oats on flag-oats, wheat, cole fed.

Outwell—Hemp, hemp, flax, turnips, oats or hemp; or hemp, hemp, flax, wheat, hemp, oats or barley.

Wisbech—Flax, wheat, beans, oats or wheat, (Mr. Lawton).

Wimpole—1st, cole fed, barley, clover, wheat.
2d, Fallow, ditto, ditto, ditto.
3rd, ditto, ditto, beans, ditto or turnips.
4th, Tares fed, wheat, barley, fallow.
5th, Cole, barley, pease, fallow.
6th, Crop and fallow.
7th, Cabbages, tares fed, cole, oats, beans, wheat.
8th, Crop and layer.

Whaddon—Beans, fallow, barley, beans, wheat and layer.

"Mr. Beaumont's

" Mr. Beaumont crops also, fallow, barley, clover, wheat, sowing seeds on half the barley, by which these courses divide the farm. If the seeds fail, winter tares, spring tares, then fallow for wheat." (A. Y. Annals.)

Long-Stow.—" Dr. Thompson's courses: fallow, wheat, beans, barley layer two years. Oats or fallow, wheat, clover, wheat, beans, barley layer two years." Oats (A. Y. Annals.) I could not procure the result of these courses, Dr. T. having left the parish; his example has not been followed.

Chippenham—" Four, five, or six shifts; four turnips, barley, clover, wheat, five add barley, &c. six add barley, &c. but the clover mixed with seeds and laying two years." (A. Y. Annals.)

Little Wilbraham—Turnips, barley, clover, wheat.

Weston Coville, same as Little Wilbraham, adding trefoil with the clover. Some here retain field course.

Abington Pigots and Guilden Morden.—Same as before enclosure, viz. 1st, fallow; 2d wheat; 3rd, oats or barley; or 1st, fallow; 2d, barley; 3rd, pease or beans. Mr. A. Y. observes, " this is an extraordinary fact." (Annals.)

Babraham—Colonel Adeane, on lands esteemed foul; 1st, tares fed by sheep; 2d, turnips fed by sheep also; 3d, barley and layer; or 1st, pease (on layer) 2d, tares fed; 3d, turnips fed also; 4th, barley and layer. Mr. Darnton, of this parish; 1st turnips; 2d, barley; 3rd, clover and trefoil; 4th, wheat or pease; if wheat, then tares, for crop, if pease, then wheat. Mr. Phipps, (at Bourn-Bridge) 1st, tares fed; 2d, turnips or cole fed; 3d, barley and seeds; 4th, wheat; or, 1st, turnips; 2d, barley; 3d, seeds; 4th, wheat or pease; 5th, tares for feed; 6th, turnips. N.B. Sows the pease every third furrow.

Childersley. " Mr. Francis; 1st, fallow or cole fed; 2d, barley; 3d, tares; 4th, wheat; or, 1st, fallow; 2d, wheat and clover; feed clover in spring after the wheat is off, and sow oats on one earth; success great. Again fallow, barley, clover, wheat or fallow, barley, fallow, wheat; does not repeat clover oftener than once in eight years. His cropping after burning; is, 1st, cole fed; 2d, barley; 3d, rye; 4th, oats and clover; 5th, wheat or cole, barley layer. Rev. Mr. Leworthy; 1st, cole for crop; 2d, barley; 3d, wheat; 4th, tares; 5th, tares or clover; if tares feed them, then wheat. Sufficient time has not elapsed since enclosing many of the parishes, to ascertain the advantage of the newly adopted courses, but no doubt is entertained by the generality of persons, of their superiority over the old field ones.

In fens.

The perfection of fen husbandry is to be seen at Thorney, under the direction of Mr. Wing, whose management is so superior, that it is to be lamented his jurisdiction as superintendant of draining and embanking, does not extend over the whole level of the fens. His cropping process is: "pare and burn, and spread the ashes immediately; 1st, crop, cole fed by sheep; 2d, oats; 3d, oats or wheat; with either, layer for as long time as it remains good. The layer ray grass two bushels, white clover eight or ten lbs., and on lands not liable to be flooded in winter, one sack of hay-seeds, six or seven lbs. of rib-grass, seven to ten lbs. of white clover, a small quantity of ray-grass; on the latter lands, the seeds are sown on the wheat."

Occasional variations.

1st, Sow red clover with first or second crop, feed it, or mow, sow wheat in autumn.

2nd, When the wire-worm is suspected, sow cole-seed two first years, which is an admirable practice, and tends more to destroy that insect than any other known by Mr. Wing.

3rd, Lay down with cole seed the year after the second crop of corn, sowing the ray-grass and hay-seeds with the cole, feeding it in the winter, and sowing the white clover in the spring: this method has been found to answer extremely well.

4thly, Lay down without a crop of corn, this esteemed a good plan.

5thly, Sow one bushel of ray-grass, with first crop of corn, for sheep feed in winter, it causes the land to plough stiff, and makes it more adhesive.

Mr. Wing writes as follows to the Board of Agriculture.

"On the convertible system in the management of fen lands."

"The following observations on the convertible system of management of fen lands, which with the greatest deference are submitted to the honourable Board, are founded on an attention to facts, and the experience with which a situation of most honourable trust and confidence wherein the writer has been long placed, has furnished him, aided by authentic documents, and the information of his immediate predecessor, comprising the result of attentive observations for at least half a century. The district which has been the object of their care, contains about forty thousand acres, the whole of which may be called fen land; there are intermixtures of high and permanent pasture, but at least thirty thousand acres may be deemed convertible land. Of the whole forty thousand acres, about one half has more particularly engaged the writer's notice, though with the whole, and with the interests of individuals throughout the whole, he has from time to time been acquainted and connected. It is about thirty years since a system for the management of this description of land was first introduced, before which there was not any that could be called such; a strong prejudice against the plough under any management, prevailed amongst the great proprietors; and the general practice of those who were unrestrained, was to crop the lands as long as it would produce any thing, then to let it be overrun with twitch (or couch) grass, to which all fen land is prone; and after it had rested a few years to break it up again, paring and burning it without care or discretion. The use of grass seeds was then so little known, that on their introduction on the establishment of the system before mentioned, and for some time after, they were the ridicule of the old fen-farmers, nothing in their opinion being so desirable for either grass or hay, as twitch (the triticum repens). Their rents, rates, and taxes were then low; their ideas confined, possessing but little, and not being ambitious; to avoid expense was their chief object. From the fen land not permitted to be ploughed, nothing was experienced but poverty and disappointment. Twitch and goose grass (or clivers), were the general herbage; the rents were unpaid, the cattle unhealthy, the inhabitants few, and the occupiers of the land continually changing without property, hope, or exertion. These are facts too well known to the writer, from his situation, and from such unerring records as he has officially become possessed of. But it may be unnecessary to descend to particulars, further than to shew what was the general state of the fens, previous to the introduction of the convertible system, and the nature and good effects thereof, in the management of those lands. The system is as follows:

About one-third part of such of the land as is not reserved for permanent pasture, is permitted to be ploughed in each year, taking into the account both cole and corn, the remainder is kept in a succession of grass and tillage.

First year—Pare and burn for cole seed,(the depth ploughed for burning being about one inch and an half;) to be fed off with sheep, which will in general fatten six or seven to an acre; hoeing it has of late been introduced to great advantage, but not set out so thin as for turnips. The most approved season for sowing cole, is any time in the first fourteen days of July, and it should be sowed in the evening of the day on which the land is ploughed, in which case it hardly ever fails to grow. Unremitting attention should be paid during the time of burning, and the ashes spread as soon as made. From neglect alone proceeds the land taking fire, which has furnished objections to the process, but it may always be prevented by proper care. Second year—Oats, for which they usually plough about three inches and a half deep. Third year —Oats, barley, or wheat, (ploughing about one inch deeper than before), with which it is laid with grass seeds for five, six, or seven years, the longer the better; the quality of the corn being always found to be superior in proportion to the length of time the land has been in grass. Beans, turnips, &c. have all been tried, but have not been found to answer. Produce of oats, from six to seven quarters an acre, weighing nine stone a sack of four bushels, or thirty-three pounds each bushel. Wheat, from three to four quarters, but of which little comparatively speaking, is sown, weight, sixteen stone a sack, or fifty-six pounds a bushel. The broad cast is the prevailing husbandry; dibbling wheat is sometimes practised but not so generally as might be wished on account of the saving in seed; in other respects it does not yet appear here to have any advantage over the former mode, the expenses attending it being more; and from observation and comparison on the produce at harvest, not greater than from that sown and managed in the ordinary way. If an objection should arise to taking two crops of corn successively after cole, it may be observed that fen land will not bear much stirring. A fallow, by exposing the soil to the sun and air pulverizes it, and destroys that compactness so necessary to fen ploughed land, and to obtain beneficial cole, on a fallow, you must manure; this tends to lighten the soil, to encourage weeds, and to cause the succeeding crop to be too luxuriant and too abundant in flag or leaf: of course the grain will be thin and light, and the grass seeds which are usually sown with that crop (the second) will be choaked and smothered, and by this method the grass land would be deprived of its full quantity of manure, where it might be employed to much more advantage. Nothing lightens fen land more than frost, nor is more injurious thereto, and to wheat sown thereon. In the spring after a long frost it is customary to trample wheat with men, as closely as possible, the expense of it is about 4*s.* an acre, and it is found to be of great utility. The grass seeds usually sown on the inferior or low fen lands, are rye-grass, and white clover, two bushels of the former with eight or ten pounds of the latter on an acre; on the higher, or such as are not liable to be flooded in the winter, of high-land or good meadow hay-seeds, one sack, rib grass or narrow leaved plantain six or seven pounds; white clover from seven to ten pounds; a small quantity of rye-grass; all which the tenants themselves provide, and indeed no expense is spared by them, in this part of their business. On land of the latter description, a wheat crop is thought to be the most favourable for the growth of the grass seeds, the land so laid down is fed the first year with sheep, the second it is manured; but if mown, not till after the grass is cut; it is then occasionally fed and mown until it is again taken up, and undergoes the course before mentioned, of paring and burning for cole, for sheep feed, taking two crops of corn in the years immediately following, &c. &c. On some of the high land parts, red clover is sometimes sown with the first and second crop, and either fed or mown the next summer, and wheat sown in the autumn. Some, when the wire-worm is suspected, sow cole-seed the two first years after breaking it up, which is an admirable practice, and tends more to the destruction of that noxious insect than any other that has come within the writer's knowledge; others lay their land down with the cole-seed the year after the second crop of corn, sowing their rye-grass and hay-seeds with the cole, sheep feeding it in winter, and sowing the white clover the next spring, a method which is found to answer extremely well; and some without a crop of corn, which is esteemed the best mode for the seeds of any. It is frequent too to sow rye-grass, about a bushel an acre,) with the first crop of corn, for sheep feed in winter; which causes the land to plough stiff, making it more adhesive; but these are only occasional variations of the general system. Experience shews, and the writer has with very great satisfaction convinced himself thereof, that on every time of taking up and burning the land, the quality of cole for feeding sheep is not deteriorated, but is as good as that obtained at a former period, and that from very old land, unhealthy, and apt to kill the sheep put upon it; it is also worthy of observation, that by no other means hitherto used, can cole of equal quality, or even that will fatten sheep, be procured on fen land; which being the foundation for all the ensuing succession for crop and grass, the necessity for obtaining good, may easily be conceived: indeed the so doing is the grand desideratum in fen-farming. Such is the present convertible style in the management of fen lands, no part of which appears defective, it is attended with no difficulty in its execution, may be continued for ever, and the land kept in a constant state of fertility, requiring no other manure than that, which it is in itself from time to time capable of producing. The good effects of it are, that the rents have been progressively more than doubled, and that such an increase of population, prosperity, the various kinds of cattle, wool, and of animal and vegetable food has arisen, as to give to the country where it is established, which before was depressed far beyond its due level, a degree of importance and respectability, which few of the like extent, exceed, or perhaps equal."

To compare Mr. Wing's practice with that of others,

1st, On lands of the first quality, as stated by Mr. Vancouver; pare and burn, cole for sheep feed, oats, wheat, oats, wheat, cole, seeded and layer, sometimes the layer omitted, then oats, layer.

2nd, Lands of the second quality, by Mr. V. also:

Pare and burn, cole, oats, oats, wheat, cole fed, oats and layer. Mr. Scott, of Chatteris, gives the following as the more general cropping of the fens. Pare and burn, cole, fed or crop; more generally the former; oats or wheat, oats or wheat again, for four, five, or six years successively, then layer for three to six years.

Mr. Scott writes as follows to the Board of Agriculture on the management of fens: "To convert coarse fens, moist moors, aquatic mosses, and very rough low grass lands into tillage; and afterwards into fine, rich permanent pasture; such lands should be ploughed, burnt, sown with cole seed or some other ameliorating crop, and a crop or two of grain, and artificial seeds, having been previously well drained. All low lands that are intended to be burned, should be ploughed in May, or at least as early in the year, as the surface is sufficiently dry to bear the horses to draw the plough; because such lands give a much better opportunity for their being burnt and sown with cole-seed when ploughed early in the year, than when they are ploughed late in the summer. But in wet seasons, sooner than miss a crop, fen farmers sometimes plough for cole-seed, as late as the middle of June, or even the beginning of July. With respect to the thickness of the furrows designed for burning, they should always be ploughed as thin as they can, without balking any part of the land; and they are sometimes ploughed, where the surface is even, and the sward tender as thin as one inch, or an inch and a half in thickness; but if the surface is very rough, uneven, and tough, the surface in general must be ploughed much thicker, or the plough will miss more than half the surface. However, the rougher, coarser, and more impregnated the surface is with the roots of rushes, reeds, and aquatic rubbish, the less injury the land will receive, from the furrows being ploughed thick; but where the land is too soft for horses or oxen to walk upon, or the surface too rough for the plough; such bogs should be pared with a turf spade, or rather with an instrument made on purpose. Respecting burning, as soon as the sods are sufficiently dry, the furrows or parings should be placed in heaps. In fens, the labourers or servants make the heaps for burning commonly about two feet, or two feet and a half broad, and about twenty inches or two feet high; and the instrument they are mostly made with is a strong hay fork. As many balks or spots will unavoidably be missed by the plough, especially where the surface of the land is very uneven, some heaps should always be placed on such patches, and the sward there will be burned, as well as that which was ploughed. In the fens, some farmers have introduced a cheap instrument drawn by a horse, to heap furrows for burning. After the heaps are made and are sufficiently dry for burning, the persons who set fire to them generally begin in the evening, for such fires burn best in the night, and they always begin to fire those heaps first that are on that side of the land that is farthest from the wind, because the wind then wafts the smoke from them ; for if they were to begin to burn on the windward side they would be almost smothered with clouds of smoke. And as soon as one row of heaps is on fire, the persons who manage the burning, carry fire with their forks from those heaps that are burning, and set the next row on fire, and so on, till all the heaps are in a general blaze. In dry weather the heaps burn very furiously, the fire soon consumes the vegetable furrows, pernicious aquatic seeds, and many injurious insects ; it provides also a plenty of the richest ashes to manure the land; which when spread over the surface seldom fails to produce an extremely luxuriant crop of cole-seed, which smothers such weeds and seeds as had escaped the burning. As this prodigious bulky crop is always eaten on the ground, it amazingly enriches the lands, and leaves it in a fertile state, for a crop or two of grain and artificial seeds. If such surface should again, through such a breach of banks, or mismanagement, acquire a sour sward, it may be burned again with care, not only without any injury, but with greater advantage. There is fen land in the parish of Chatteris, that has been ploughed and burned several times, that lets this spring at three guineas per acre, a plain proof that ploughing and burning a few times, with good management does not injure the land. And many other specimens might be pointed out in the fens, where the land has been really improved by being ploughed and burnt several times; but where land has been ploughed and burnt from time almost immemorial, and the tenants have ploughed the furrow deep, and frequently permitted the fire to burn the moor much lower than the land was ploughed, and have repeated such burnings very often, there are instances where the surface is lowered, and the land greatly injured by such barbarous burnings; nevertheless, it is not burning in a proper manner that injures rough, sour, aquatic swards, but burning them too frequently and too deeply; for burning rough fens, aquatic moors and bogs once or twice in a proper manner, is certainly the most excellent mode of bringing such rough surfaces and moory swards into cultivation. The heaps of ashes should always be spread about the land immediately, because if the weather be hot and dry, and the ashes not speedily spread, the fire often burns too deeply under the heap-bottoms, and materially injures the land. The instrument used in the fens to spread the ashes about the land, is a piece of board about eighteen inches long, and ten or twelve inches broad: the top corners of this board are a little rounded, and the bottom edge is thinned, and a hole is boared into the board about the middle, and a stick about five feet long, and as thick as a small fork, is fastened in the hole. With this simple cheap instrument, the ashes are drawn or pushed about the land very expeditiously. When labourers take the work they have commonly about five shillings per acre, for heaping the furrows, burning the heaps, and spreading the ashes. Immediately after the ashes are spread, the most prudent farmers plough the land to turn the ashes under, and prevent them from being blown away; for it is a great loss to have such valuable manure as the ashes are, blown into the dikes, ditches,

ditches, and drains.* And when the land is thus ploughed over, and the ashes thus turned under, about Midsummer the farmers sow their cole-seed (rape-seed), and rejoice if they are favoured with the appearance or commencement of rain about the time when the seed is sown. But if the cole-seed does not come up well after the first sowing, the farmers sow over again. The fen farmers very uniformly sow about half a peck or a gallon of cole-seed to a statute acre; of late years, some of them sow a quarter or half a pound of turnip seed, with the half peck of cole-seed on an acre, and it answers very well, especially if the cole-seed misses growing. Sometimes in the fens and adjacent high land cole-seed is sown on fallows, swards, and stubbles, without the land being either burnt or manured, and the crops are sometimes very good. When the seed is sown, some farmers only draw a light roller over the land and cover the seed, but many draw a hurdle with bushes under it for the same purpose, and others draw a light pair of harrows with bushes under them, over the seed, which covers it very properly. Respecting the young cole-seed plants, they very seldom require either weeding or hoeing; a few plants are sometimes transplanted from thick spots to thin patches. When the cole-seed is a fair average crop, an acre will feed eight large Lincolnshire sheep, or a greater number of smaller sorts. The sheep are commonly put to the cole-seed about the 11th of October, and have liberty to go into the whole field as soon as they are turned in, because the sheep commonly eat the grass round the outside of the fields, and then the outleaves of the cole-seed, and the heart and stalks of the cole-seed last. A few sheep in a hundred sometimes die of the garget, when nearly fat, the best remedy for which is bleeding; but it is a common custom in the fens, to slaughter such sheep, as soon as ever they are perceived to be affected with the disorder. A good crop of cole-seed will commonly sell for two guineas per acre, to be eaten on the land; this year an average crop sold readily for three guineas per acre. After the sheep have eaten the cole-seed, the stalks are often permitted to stand for seed, and will frequently produce twenty-six to forty bushels per acre, but where the land is designed to be laid down with artificial seeds for permanent pasture, the cole seed should never be permitted to stand for a crop of seed, because such a crop greatly exhausts the land. If the best modes of cultivating this most excellently ameliorating crop were adopted on all rough fen lands, rushy moors, wet mosses, and rough bogs in the kingdom, it would improve the land in a superlative degree, amazingly enrich the tenants, and provide a much greater supply of mutton and meat, at the season of the year when it is most wanted for the great metropolis, and all the country markets also. It is therefore much to be lamented this most excellent crop is not more generally propagated in the united kingdom. The fen farmers are certainly backward in other branches of agriculture, but in the culture of cole-seed, in which they have long had the most extensive practice, they certainly excel most other farmers in the kingdom, perhaps in the world. The most common place in England for raising this crop is in the fenny counties. When the cole-seed has been eaten on the ground, especially after a fallow, the fine fen moory soil is in a most rich fertile state, and never fails to produce a prodigious crop of any grain that is sown upon it. Fen farmers commonly sow oats (five bushels per acre), on cole-seed fallow land, the next after the cole-seed, and not only obtain a very heavy crop, but abundance of grain, for the produce is seldom less than eighty-four bushels per acre, and frequently more. About Wisbech and Well, hemp is frequently sown next after cole-seed; and the produce is generally forty stone and upwards per acre, but hemp is too exhausting a crop for any land designed to be preserved for permanent pasture. Now that oats sell so well, the bulk of fen farmers sow oats the first year after cole-seed."

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* See Mr. Wedge's opinion on this point.

I heard of the following courses in fen:

At Whittlesea. Pare and burn; 1st, cole fed, and sometimes then seeded; 2d, oats; 3d, wheat; 4th, wheat or barley, and seeds from five to ten years. Another: 1st, cole; 2d, oats; 3d, wheat and layer, four to eight years. On foul land, 1st, fallow; 2d, wheat and layer.

At Elm. Pare and burn; 1st, cole fed; 2d, oats for two or three years; then layer for five or six years. Again (Mr. Saffory), pare and burn; 1st, cole fed; 2d, oats; 3d, oats or wheat; 4th, cole; 5th, oats and layer, viz. clover; 7th, wheat. Again, not pare and burn, but 1st, fallow for cole; 2d, oats and clover, then wheat. Again: pare and burn; 1st, cole fed; 2d, oats; 3d, wheat; 4th, cole; 5th, oats; 6th, layer, for five years, if good.

Chippenham. Pare and burn; 1st, cole or cabbages for sheep; 2d, oats and layer. N.B. The cabbages succeeded wonderfully, and were very valuable, double the value of cole or turnips on land the most adapted to either.

Chatteris. Mr. Fryer on fen worn out; 1st, cole fed, and with the cole grass seeds, feeds the cole in about three weeks after sowing, keeps feeding close all summer, gets excellent layers thus. Again 1st, cole; 2d, oats; 3d, wheat and layer. N.B. Finds layers often smothered by the corn.

Wisbech. (Mr. Lawton); 1st, cole fed close, and with it harrows in layer. The layer will be fit for feeding the May-day in next year.

Mr. Edes pare and burn; 1st, cole fed; 2d, 3d, 4th, oats; 5th, layer. Again: 1st, turnips; 2d, barley; 3d, clover; 4th, wheat; with great success.)

Soham. Mr. Wedd recommends pare and burn; 1st, cole; 2d, oats or spring wheat; 3d, ditto and layer. Again, 1st, cole fed; 2d, spring wheat and layer.

Little Wilbraham. Pare and burn; 1st, cole; 2d, oats or barley, or wheat; 3d, ditto and layer.

Mr. A. Young, (who has been over every inch of the fens), gives his opinion on the husbandry best suitable to them; thus,

"The best system for the fens may be thus described. Pare and burn for cole, pare thin as possible with the French plough, and sow cole upon the first earth, a shallow one; feed the cole with sheep only, then sow oats twice on one earth each time. Then muck for cole on two earths or three, according to circumstances, feed the cole with sheep, then sow oats and lay down for three or four years as the seeds remain; suckling ray and hay seeds, then pare and burn for cole. The common practice is to lay down with the second or third crop of oats, after the first breaking up; but three crops are too much, and exhaust the land. By laying down with the second crop, after the first breaking up, the land is not brought into sufficient tilth to have rotted the roots of the spontaneous growth, which would be apt to vegetate again, and damage the sowing grasses in order to destroy such weeds; laying down is postponed till after another crop of cole and oats, by which means the seeds will last longer." Mr. Young is silent on cole-seed *crop*, and on ray-grass *seeded*, two articles of extensive cultivation in the fens;

it may also be remarked that the preceding courses of cropping do not shew, that "the common practice is to lay down with the second or third crop of oats, after the first breaking up," as Mr. Young observes; it appears many more crops are often taken.

Fen layers.

At Wisbech. Ray-grass one bushel, white clover seven lbs. red clover, seven lbs., rib grass five lbs. (N.B. Rib grass is called also lamb's tongue.) It is said water will not kill white clover, it will red. Another: ray-grass only two bushels; stands for seed and layer, remains four years, then burn again.

At Wisbeth. (Mr. Waudby). Ray-grass, one bushel, white and red clover, and rib-grass together, twelve lbs. disapproves of ray-grass *only;* but where it is so sown, should be mown first year for *seed*, fed second year. If stands for seed will not remain above another year, and is then sometimes mown again for seed. Mr. Edes. Red clover and rib-grass, or ray-grass, only two bushels: when it is generally seeded.

At Waterbeach. Ray-grass, two bushels, Dutch clover, seven lbs.

At Littleport. Ray-grass, one bushel, Dutch clover, red clover, rib-grass, each four lbs. Another, ray-grass one bushel, Dutch clover and rib-grass, of each half a bushel.

At Chatteris. (Mr. Scott says). "The fen commons after having been ploughed three or four years, are laid down with red clover, white clover, (Dutch clover, or honey-suckling), trefoil, (or black nonsuch) narrow leaved plantain (or rib-grass) of each three lbs. and one bushel of clean ray-grass. N.B. two bushels of high land hay-seeds are preferred to the one bushel of ray-grass.

At Elm. (Mr. Safory.) Ray-grass one bushel, white clover, ten lbs., one or two lbs. red clover.

At Soham. (Mr. Wedd.) Ray-grass, Dutch clover, red clover, trefoil. Mr. A. Young recommends suckling ray grass and hay-seeds.

Thorney. Hay-seeds, rib-grass, red and white clover, and ray-grass. See Mr. Wing's (of this parish) layer, page 105 and 110.

SECT. IV.—CROPS COMMONLY CULTIVATED.

1st. *Wheat.*

PREPARATION. Tillage in open field; fallow of four earths, after two or three crops, spring corn. In uplands in severalty, or enclosed, where seeds have been introduced; wheat is generally grown after clover, on one earth; otherwise, as in open field, after fallow; or after beans or pease, on one earth. On heath lands, wheat is often the first crop after breaking up by paring and burning on fen. Wheat is sown on one earth after two or three crops of oats, and is put in in spring as well as in autumn, Mr. Leworthy of Hauxton has had wheat after tares, but did not succeed, though he mucked for the wheat.*

Manure. In uplands, lay on (at seed time and plough it in), eight to ten loads (60 bushels per load), of muck, having been thrown up in yard, or carried to a hill and turned over; this if after a fallow, and sometimes also if after a crop or layer. Sir Charles Cotton of Madinglay, folds for wheat after fallow. Many farmers use oil-dust for this crop, eight to ten bushels per acre, at 3*s.* per bushel, sow it at the time of sowing the wheat; is supposed to last only one crop; if season prove dry does no good even to that, and is thought by many farmers injurious to land. N.B. 1000 cake will produce 88 bushels of dust. Rev. Mr. Lane of Carlton, folds and top dresses all his wheat he can.

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* Mr. Wedd on fen land at Soham; 1st, ploughing and burning; 2d, cole fed; 3d, spring wheat.

Rev. G. Jennyns, folds his clover land wheat immediately after sowing it, and gets better crops by that, than by any other method.

Mr. Mortlock of Abington practises the same. Soot is often sown on wheat, it is found to check the wire-worm: many farmers believe it an absolute preventative to the effects of that insect so destructive in the fen; about twenty bushels per acre are sown. When (in the fens) wheat is the second, or more than that number of crops after burning, it is mucked for.

Sorts. In uplands red and white, of the former Burwell produces a quality much esteemed and used not only in this county, but in many others. Of this wheat and of the process of getting what is wanted for seed, the Rev. Mr. Turner, rector of that parish, thus writes to Mr. A. Young. "It is the white lands which produces the seed wheat which is in great request in the north, on account of its becoming ripe much sooner than any other seed that is sown, and consequently makes an earlier harvest in a cold climate. This wheat bears the highest price in the market, and is threshed as soon as it is got into the barns, that is, it is only topped out, not threshed to straw; and the sheaves are tied up again, and laid up for some time before they are threshed again to straw, so that it is the

ripe

ripest and best part of the ear from which the seed is obtained in the early threshing. The reason why this white land wheat is so beneficial for seed, I humbly think is owing to the saltpetre with which the soil is impregnated arising from the white stone underneath it, and what has confirmed me in this opinion, is that my house is built with the same stone dug out of the pits, and the walls in damp weather, are always wet with saltpetre, and produce a great deal of moisture after frost."

Mr. Darnton of Babraham tried white wheat but did not succeed.

Mr. Francis of Childersley, grows great wheat, and gets ten bushels per acre more than of any other sort. Spring wheat is grown in great quantities in the fens. Mr. Wedd, at Soham, had this year 83 acres of it, this sort succeeds generally with the fen farmer. Rev. Mr. Leworthy, of Hauxton, never changes his seed of any grain; he always sows "tail" wheat, and never dresses it. "Mr. Ground, of Whittlesea, and his father, for sixty years together, have never changed their seed-wheat, except from fen to upland, and from upland to fen; and to this day have been as free from blacks as the crops of any other farmers whose practice varies; the management and produce of Mr. G. equal to his wishes." (A. Y. Annals, 44.) This plan of Mr. G. is almost general in his parish. Mr. Shepherd, of Chippenham, always sows ordinary seed, and has succeeded equal to those who have used the best. Mr. Fryer, of Chatteris, has had a most striking confirmation of the doctrine of Sir Joseph Banks on the subject of seed wheat; Mr. F. had a crop so bad from mildew that his workmen would not accept it for the cost of threshing it, nor would any stock eat it; he cut the ears of this wheat into two pieces, and dibbled a piece into every hole, he had a great crop and of excellent quality.

At Burwell they never change their seed-wheat, except some few who are tempted by price, to sell their own, and buy cheaper.

At Swaffham (adjoining parish to Burwell) they change frequently.

Preparation of seed. Mr. Wedd, of Trumpington, dresses his wheat in the usual way, preparing the night before wanted, enough for the succeeding day's use. Mr. Hart, of Swaffham, washes in pure water, uses one lb. of salt to one bushel of wheat; then limes it.

Mr. Houlton, of Weston Coville, uses lime after having watered the wheat in Bombay water, never washes in pure water, never had burnt wheat; is a farmer of long experience.

Mr. Wedge, of Westley Bottom, limes and washes, but does not salt.

Mr. Ingle, of Little Swaffham, washes only, never had smut for twenty years.

Mr. Treslove, of Trumpington, thirty gallons of water, twenty-eight lbs. of salt, boil them an hour, add half a lb. of arsenic, boil all together half an hour, steep the wheat in this.

Quantity of seed. On uplands, two bushels; on fens, three bushels per acre.

At Abington, Mr. Mortlock three bushels. At Harston, Rev. Mr. Leworthy sows less seed than his neighbours by half, and is sure he gets as good crops as they, and gets as *full a plant.* Rev. Mr. Lane, of Carlton, prefers less seed than the usual quantity. Mr. Darnton, of Babraham, prefers a full seed. Mr. Wedd, at Soham, less than two bushels of spring wheat; if early, sows less.

Mr. Edes, of Wisbech, one bushel, drilled at nine inches.

Time of Sowing. Autumn, October and November; Spring, March and April.

Mr. Wedge, of Westley Bottom, prefers early sowing, has had repeated proofs of its superiority, he shewed me a remarkable one, where only one day intervened between the sowing the two adjoining pieces.* Rev. Mr. Lane, of Carlton, is *against* early sowing wheat, says he always gets much more from late sowing, the later he sows the less straw he gets, but the more corn. Mr. Darnton, of Babraham, sows earlier than his neighbours, and thinks he has an advantage over his neighbours, on an average of years. Mr. Wedd, at Soham, has sown spring wheat in April, and autumn wheat in December, and has succeeded; but prefers earlier sowing.

How put in. On uplands generally broadcast, ploughed in on four-furrow ridge; do not wish to have land fine at sowing, because it is then apt to bind. Mr. Leworthy, of Harston, dibbled one bushel per acre of spring wheat on an old pasture, on one earth in February; crop twenty-five bushels per acre. Mr. L. prefers dibbling wheat on stiff soils, and broadcasting on others. Mr. Edes, of Wisbech, has (in fens) dibbled and drilled wheat, but prefers the latter; drills at nine inches. Mr. Darnton of Babraham, has dibbled wheat, but did not think the advantage sufficient to induce him to repeat the practice; he has also drilled wheat at nine inches; but does not continue it, he thinks it improves the sample, but that it does not increase the produce. Mr. A. Young writes on Mr. Darnton's drilling. "Mr. Darnton has found the drill better than broad-cast for all corn, when seeds are not to be sown, but is clear that it is disadvantageous if clover, &c. &c. are to be raised; the last year (1790) lost his crop entirely by trusting to it, but draws his conclusion not from that experiment only, but from others. Wherever he sows seeds of any kind, the corn is broad-cast. He is of opinion that if the whole farm is under drill, it would require more horses than if under broad-cast. His drilled wheat this year is better than broad-cast in the same field, but both have lost plant greatly, (Annals, v. 18, p. 226). Drilling wheat is practised by Lord Hardwicke at Wimpole, when the land can be got in order for it, distance nine inches, and *supposed* to beat broad-cast. Mr. Philips, of Bourn-Bridge, has drilled wheat and discontinued it, as have many of his neighbours. Why Mr. P.? "Because we could get nothing from it." Mr. Wedge, of Westley Bottom, says "drilling will not do, our lands are not good enough;" and "the corn thus deposited will not shade them enough. Mr. W. approves drilling on heavy good lands. Professor Harwood, of Bartlow, is of the same opinion. Mr. Shepherd, of Chippenham prefers the drill to broad cast, and assures me it beats it. Mr. Waudby of March, drills fen lands with wheat, and approves its distance six to nine inches.

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* Mr. Wedge writes to the Board of Agriculture on this subject. "I must mention that on the 1st day of August, which was the day I began to sow rye, I sowed an acre of wheat, which was by far the best of any I had that year; it was quite free from mildew, and I have found by experiment for many years, that sowing early and pretty thick is the only way to prevent wheat from mildew." (Com. v. 4).

Mr. Scott, of Chatteris, writes, (also to the Board). "All loamy soiled grass lands that lie low on a clayey substratum, will bring excellent wheat if sown early in the spring, when a bushel will do as well as two bushels in autumn." (Com. v. 4).

An opinion prevails that drilling white lands would not answer: they require too much seed to be deposited that way. Rev. Mr. Hicks, of Wilbraham, says that dibbling gives less wheat than broad-cast, but of better quality.

Culture while growing. Hoeing by the best farmers, but far from the general practice, crops are therefore generally foul, though after complete fallow. Where plant is too thick, rake with a drag, rake such as is used for raking stubbles. Mr. Darnton, of Babraham, did not hoe his drilled wheat; his reason is it would have let in the drought, and have mode it subject to root-fall. Mr. Edes, of Wisbech, hand hoes, and horse hoes. Rev. Mr. Leworthy, of Hauxton, harrows his wheat in May with very heavy harrows drawn by four horses, teeth of harrows only three inches asunder, and cutting six inches deep, succeeds so well, intends continuing the practice; but recommends doing it in March. In fen if much frost, during the winter, the wheat is trampled in spring by men (three or four) abreast, price 4*s.* per acre. Mr. Darnton, of Babraham, used to feed his wheat, but is sure he suffered by it.

Harvest. Reaped, and generally by "acre men," viz. strangers (mostly Irishmen) who come over in large companies, and do that work only. Is shocked in the usual method. Do not cut early.

Produce. Five Co. per acre average of county. Mr. A. Young, in his "account of average produce of Great Britain," states that of wheat in this county, at 23½ bushels per acre, (Annals, v. 36). Mr. Vancouver states produce of high-land of county at 24 bushels; of fen, 24½ bushels per acre. I could get no confirmation of either Mr. A. Y.'s or Mr. V.'s reports; it may be suspected my information is nearest the fact, if it be true, as Mr, V. states, that the open-field do not produce so much per acre, by three bushels one peck, as the enclosed land does, as the former *breadth* exceeds the latter so much.

Mr. A. Young gives the following produce of wheat.

At Whittlesea, three to four quarters. At Islesham, 15 to 16 Co. At Connington 20 to 25 bushels. At

Waterbeach five loads, (viz. 25 bushels). At Chippenham before the enclosure, 5 Co. since 6 Co.

At Soham, (Mr. Wedd, 1805), three to four quarters. (In fen).

Stubbles. Generally ploughed in. Some few haulm them.

Mr. Darnton, of Babraham, used to do when in business.

Disorders. Here as in other counties, the mildew is prevalent, and opinions on this subject are not peculiar to the county.

Mr. Edes, of Wisbech, thinks drilled wheat as little liable to it as broad-cast; he always cuts early if he sees the mildew.

Rev. Mr. Leworthy, of Harston, thinks it proceeds from drought in June, succeeded by heavy rains. In 1805, Mr. A. Young put the following queries on this subject.

Queries.

1st, What soils have yielded the crops most affected by the mildew?

2d, Have early or late sown crops suffered most?

3d, What situations have been most exposed to it; high and ventilated ones, or low and sheltered vales?

4th, Have thin or thickly sown crops escaped the best; and thin or thick from other circumstances, drilling the red worm, &c. &c.

5th, Has the use of old or new seed been attended with any effect?

6th, If from your observations you conceive the causes to be atmospheric, of what sort; late frost; fogs; severe or open winters, &c. &c.

7th, Have crops on fallows, or layers escaped the best?

8th, Has manuring whether by lime, dung, fold, &c. had any effect?

9th, Have you made any observations on the barberry-bush as locally affecting wheat?

10th, Has there been any difference from the sorts of wheat sown, bearded, red, white, spring, &c.?

11th, Has early cutting been found useful, and how early in point of the milk of the grain being coagulated?

12th, What proportion in your opinion does the late crop bear to a common average produce? With any other circumstances you may think applicable to the inquiry.

Mr. Wedd, of Trumpington, answered these queries; thus,

To 1st Query. "In general, gravelly soils have been most affected by mildew. To 2d. I think there cannot be a doubt but late sown crops have always in seasons subject to mildew, been found the most injured. To 3d. The vales of the highlands have been most damaged in such years as the last. To 4th. I cannot decide upon, but rather think thick sown crops have escaped the best. To 5th. The old seed has proved most productive, but I apprehend not on account of its being old wheat, but being earlier sown. To 7th. In general, layers suffered the least by mildew. To 8th. Folded land has been most affected by mildew. To 9th. The land near the barberry is in general evidently affected by the mildew. To 10th. I think the bearded wheat was less injured by mildew last season than either the white or red wheat, but spring wheat the least hurt of any. To 11th. Early cutting very advantageous when wheat is mildewed. To 12th. I apprehend not more than two-thirds of a crop. Observations by Mr. Wedd. Wheat that was fed off in spring by sheep, was more injured by mildew than lands not fed.

Mr. Shepherd, of Chippenham, answers Mr. Y.'s queries; thus, 1st. All loose or chalky soils enclosed, and sheltered, having been pasture, or sainfoin layers; not limed or marled, after breaking up were most affected, but the late season affords instances of general mildew. 2d. Late sown crops suffered most, but in many instances the effect is general. 3d. All low and sheltered, but in many instances general. 4th. Thin plants escaped best, but many instances as above. See observations. 5th. I have heard that old seed has escaped in some instances; but I tried several acres drilled in rows, alternately old and new; but found no other difference, excepting that of the new vegetating quicker by six or seven days than the old. 6th. From my observations it does appear that the causes of mildew are various, are chemical and mechanical, any of which producing a very sudden change in the plant, a superabundant fertility, too rapid vegetation from frequent showers and warm weather, either of these causes produce diseased luxuriance, and a consequent mildew, as appeared the case in last May, during the frequent rains; for I observed that the wheats in general never promised a more abundant crop, (as far as could be judged by their appearance at that time), but from the beginning of that showery season, the wheats in general turned pale and unhealthy; very cold weather, heavy fogs, late frosts, may by producing that change which their different influence is capable of, produce mildew, but more especially any sudden change during impregnation, and after the grain is formed; by preventing that necessary and regular supply of nutriment, which the plant cannot receive in a state of obstructed circulation; it appears certain that the cause of mildew may happen during the months of May, June, July or August, but that it is not likely to originate in winter. From severe winters and backward springs it frequently happens, that we cannot form an idea of the wheat crop till the middle of May. Perhaps a severe winter, and backward spring, succeeded by a rapid vegetation, subject to be checked by the changes of this uncertain climate, may occasion mildew. Nor does it frequently occur that open winters produce mildew. 7th. In different places the effect is quite the reverse; but altogether I think the wheats on layers the best. 8th. I have long considered that the barberry bush is *certain* as to *injuring* wheat planted near it, but that the injury it sometimes produces is not simple, but compounded with other causes. I never saw a single instance of wheat growing near a barberry bush, not being injured more or less. I have seen instances of wheat not being injured after the bushes were destroyed, and where the oldest man (near 90) had never before seen wheat, but what was mildewed. On these lands I left two bushels as an experiment, the following effect and particulars were foretold by the old man as near as possible; in a semicircle of half an acre or thereabouts, near each bush the wheat turned quite black, the straw quite rotten, and not a single grain could be found a fortnight before harvest, which would vegetate; in a line across the field also issuing out of this semicircle, the wheat was much injured, but least furthest from the bush; the whole of the wheat of the field was injured, and weighed only 15 stone per Co. (14 lbs. to the stone). In the parish of Moulton, near Chippenham (but in Suffolk) Barberry bushes abound, near which wheat has not been sown for many years, the occupiers having experienced the certain effects. A similar instance may be found in Landwade, (in this county and near Chippenham also.) In the field of Fordham, adjoining Landwade, barberry hedges, never escape mildew, more or less. It does frequently happen that all other corn growing near these hedges, is also affected. In the parish of Fettwell (Norfolk) a similar instance may be found of general mildew from barberry bushes, so as to induce the occupiers not to sow any wheat near them. Mr. Simpson, of Nowton, Suffolk, Mr. Worledge, of Inglam, and Mr. James Slutter, at his Bury farm, have assured me of the effects of barberry-bushes in the last crop nearly similar to what I have stated. 10th. Bearded and white wheat have escaped the best, the common red and spring wheat is most injured. All my observations relate to red. 11th. Early cutting produces the best grain, viz. when the grain begins to harden, but it requires a longer time in the field, or it will not separate from the straw. 11. Below one-half an average crop.

Observations by Mr. Shepherd on the crop harvested 1804.

1st, Sixteen acres of deep, rich chalky loam, rather low and sheltered, well dunged with good horse dung, drilled early in October, at twelve inches, seed three bushels per acre, nicely hoed and weeded on the 1st of May, shewed a prospect of 10 Co. per acre; on that day fell a heavy rain succeeded by following showers, from that time this plant changed produce two Co. per acre, very much mildewed.

2nd, Twenty acres of gravelly loam, high, dry, and open, a two years layer of white and yellow clover, fed with sheep each season, and well folded before and after sowing, dibbled at eight inches, first week in October, two bushels per acre, nicely hoed and weeded; the same observations as above, 1st May, and a prospect of seven or eight coomb per acre, produced two Co. per acre, very much mildewed, as much as the first. 3d. Thirty-five acres of thin stapled chalky loam, on a sterile, yellow, chalk bottom, a clover seed stubble, manured with ten bushels of rape dust per acre, drilled in with the wheat at eight inches in the second week in October, three bushels of seed per acre; the land high, dry, and open, nicely weeded, hoed, &c. not so much mildewed as the two preceding cases. Produce three Co. per acre, and 14 lbs. per Co. heavier. At the beginning of harvest this field exhibited a singular appearance, for certain small spots looked bright and were not mildewed; this induced me to examine the substratum, and I found those spots differed from the general soil, a thick stapled loamy sand, on a gravelly bottom; therefore suppose that the difference in the dryness or innate warmth of the subsoil, occasioned the escape from mildew, but when I ascertained that the whole of the parish suffered so generally, that the difference of the times of sowing of the variety of manures, treatment of lands, quantities of seed, &c. afforded no criterion by which to form any decisive ideas, I know not what to think on the subject. I find however by the information of others, that the above circumstance was by no means singular. In the adjoining parish of Snailwell, the mildew was general, excepting only a spot of land of considerable fertility; a hazel loam, a southern aspect, chalky bottom, low and rather wet, but open; this spot affords great variety in the times of sowing, the different manures, in treatment of lands, in quantity of seed, &c. &c. yet all escaped the mildew; the crop is short, only four Co. per acre. Two miles distant from this spot, Fordham-field, soil and aspect as similar as possible, exhibiting all the variety of times of sowing, manures, quantity of seed per acre, treatment of lands to be expected, where there are perhaps fifty different occupiers, and the lands under common-field husbandry, all mildewed, with so little difference as scarcely to be imagined. In the adjoining parish to this latter (Frekenham) the wheats are less mildewed, on the lightest and worst lands. Go two miles further, to Heringswell; quite the reverse is the case, the wheats are worst on the best lands; unless the chemical properties of the different substratum of the different soils to which I have alluded are more different in their properties than the appearance warrants; we behold quite the reverse effects from the same probable causes." (Annals, v. 43).

Mr. Edes, of Wisbech, says wheat in fens is apt to be very "strawy and full of blacks." The wire-worm is a great enemy to wheat in fens, the lands in Landwade (similar to Burwell) are particularly subject to the mildew. The rich lands round Ely are also very subject to it.

Gleaning is a general evil in this county, and is unlimited, extending to every grain and without any regulations, the gleaners going amongst the shocks of wheat, and following the rakers of soft corn so closely, and in so disorderly a manner, as to cause perpetual dispute and complaint. Dr. Nesmith, of Leverington, thus expresses himself on this subject. "Quere. Would it not be worthy the attention of the Board to consider how the custom of gleaning might be so regulated, as to protect the property of the farmer, and to secure to the poor that portion of the grain which is necessarily left on the ground? A short act giving the magistrate a summary jurisdiction, and prohibiting the poor to glean till the land was cleared, under a penalty of 10*s.* or one month's imprisonment, and prohibiting the farmer to turn any stock on the ground for days after it is cleared, under a penalty of 5*l.* to be levied by distress, would I think answer the purpose. The depredations committed by the gleaners are very great, and the undefined right which the poor claim of gleaning amongst the sheaves, and even amongst the gavels before tied up, (for I have known even this insisted on), is a source of perpetual disputes and dissentions. Such an act must be local, because custom varies, but I believe throughout the open-fields of this county, the custom of gleaning all grains is uniform. It would also be expedient to restrain the right to the resident poor of each parish; for the want of such a regulation, the wheat crop is almost always cut too late; and carried too quickly after being cut, because the farmer dares not trust it in the field, while the poor are perpetually amongst the sheaves."

SECT. II.—BARLEY.

Preparation. Tillage, in open fields; barley succeeds wheat, two earths are given, the first before Christmas, laying the land unto the stetch; the second, the seed earth, and seed ploughed in on heavy, and harrowed in on light soils. On lands in severalty and suitable to turnips, barley follows them with seeds; three or four earths are given; the first before winter; by some, but by the majority not till spring. Where turnips are not grown, the preceding crop is usually pease, tares, or beans, and two or three earths are given.

Mr. Wedge of Westley Bottom has given the following preparation for this grain, and reported them to Mr. A. Young, who thus relates them.

"Thirty-two acres of land, the soil a good barley loam, deep, on a chalk bottom, worth 16*s.* per acre, were thrown into eleven divisions.

No. 1, Spring tares, mown for soiling.

No. 2, Spring tares, mown for hay.

No. 3, Spring tares, seeded, produce five Co. per acre.

No. 4, Summer fallow, four earths.

No. 5, Beans, broad-cast hand-hoed, but the season being very dry at the time, the work was not done well. Produce six Co. per acre.

No. 6, Summer fallow, four earths.

No. 7, Spring tares mown for soiling.

No. 8, Winter tares, ditto.

No. 9, Winter tares, seeded.

No. 10, Clover fed.

No. 11, Clover fed and then seeded, produce six bushels per acre, worth 20*s.* per bushel. The tares of No. 1 and No. 8, worth 40*s.* per acre. Two earths were given before winter; except the tares, divisions mown green, which had one ploughing extraordinary, being stirred as soon as cut. All sown with barley in 1787, at the same time, on one spring earth.

Result. No. 10, was the best of all. No. 11, was the next best. These two clover divisions produced eight Co. per acre of barley, and were better than any other by two bushels an acre; Nos. 1, 4, 6, 7, 8, equal; and the next best to the clover; no difference between spring and winter tares. No. 2, next. Nos. 3 and 9 equal, and next No. 5. The worst about four Co. per acre. In 1788, the field was summer fallowed. Manure seldom any, unless the barley succeeds turnips folded, then it has of course the benefit of that operation. Mr. Mortlock, of Abington, folds for barley, whether it succeeds turnips or not. About Harston, oil-cake dust is sometimes applied for this crop; eight to twelve bushels per acre, sown with the barley. Sir Charles Cotton, of Madingley, dungs for this crop ten to twelve loads per acre.

Sort. The common barley is in general use. Mr. Mortlock of Abington sows the barley of the Isle of Thanet, and thinks it preferable to the common. It is earlier. About Swaffham, a barley called Staffordshire barley is preferred, it is grown at Wickin, (in this county,) is forwarder by nine or ten days than the barley of this county. Mr. Wedge, of Westley Bottom, sows an early barley from Shropshire, it comes earlier into ear, and is more productive than any barley he knows of. The barley of the parish of Cottenham is said to have a strong perfume, but is only the common sort. The Rev. Mr. Leworthy, of Harston, cuts the barley he intends for seed, very green, finds it (in consequence as he supposes) vegetates quicker, and is more productive. At Burwell and Swaffham seed barley is changed every two years.

Quantity of seed. About three bushels per acre, the usual quantity.

At Whittlesea. One Co. is sown. Mr. Mortlock, of Abington, sows one Co.

Time of sowing. March, till middle of May.

How put in. Broad cast generally. Mr. Darnton, of Babraham, has drilled barley at nine inches, but discontinued it. Lord Hardwicke at Wimpole, has also drilled it, and his bailiff (a Norfolk man), prefers it to broad cast, distance eight inches. Mr. Wedge, of Westley Bottom, has also drilled barley, and does not approve of it on his soil. Mr. Shepherd, of Chippenham, drills barley in a masterly manner, and is convinced of its superiority over broad-cast, but does not drill where he sows seeds.

Harvest. Mown and turned on swarth.

Produce. Open-field six Co. per acre. Lands in severalty, where the course of cropping may be chosen, eight Co. and often more. Mr. A. Young's "Account of the Produce of Great Britain," says nine Co. that of this county.

Mr. Vancouver states it at nine Co. uplands. In fens seven Co. one bushel. N.B. Very little barley grown in fens,

fens. At Whittlesea some is grown instead of wheat, and the preparation the same as for oats in fens.

SECT. III.—OATS.

PREPARATION. Tillage. In open-field. Oats are not often grown, but when they are, it is after two or three crops of corn.

On lands in severalty. By the best farmers the same preparation, and in the same order as barley, and seeds also sown with them, by others as an *extra* crop, before fallowing.

On fens. Oats are sown after cole, which cole was the first crop after burning; sometimes two and three crops of oats are here taken successively after cole. One earth only given.

Manure. Oats are sometimes mucked for in fens, when the second or more crop after burning.

Sorts. The common white oat. The potatoe oat has been tried, and has not succeeded; it degenerates. There are two sorts of white oats, the best called "short smalls," the worst "long smalls."

Mr. Edes, of Wisbech, uses the Poland oat, which Rev. Mr. Leworthy, of Harston, thinks the greater impoverisher of any. Mr. Edes also sows in fen, seed from clay soil; he finds the potatoe oat more productive but of less weight, and that it degenerates more than any other. The Poland oat is sown on the best lands.

Mr. Edes says *all* grains are found to degenerate in fens.

Mr. Mortlock, of Abington, has also found the potatoe oat degenerate on his lands.*

Quantity of seed. On uplands one Co. per acre. On fen five bushels.

At Whittlesea. Six bushels short oats, eight bushels long oats, they sow an additional quantity in fen, on account of the wire-worm. Mr. Mortlock, of Abington, sows five bushels, and the poorer the soil the more he sows.

Mr. Edes, of Wisbech, drills in at six inches one Co. Mr. Lawton of the same place drills eight pecks, at six inches, five pecks at nine inches.†

Time of sowing. Uplands, March and April; fen, April and May.

How put in. Uplands and fen, broadcast, with a few exceptions.

In fen. At Wisbech, Mr. Edes and Mr. Lawton, drill them.

At March, Mr. Waudby; distance by these gentlemen six to nine inches.

In uplands. Mr. Shepherd drills them, and has done for many years. Mr. Edes trench-ploughs for oats, if first crop after a layer, and considers it essential.

Harvest. In uplands as barley. In fens, reaped and tied in sheaves as wheat.

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* Mr. Scott, of Chatteris, says Poland oats are ripe much before any other, and that a loamy soil suits them.

† Mr. Scott recommends 4½ bushels, Poland oats broad-cast, and three bushels drilled, and the poorer the soil, the more the seed.

Produce. In uplands, six, eight, to ten Co. per acre. Mr. A. Young in his "Account of average Produce of Great Britain," says that of this county is for this crop nine Co. one bushel. Mr. Vancouver states it at six Co. three bushels, on uplands. In fens my notes say ten to twenty Co. Mr. Vancouver says average 47½ bushels.

SECT. IV.—RYE.

Preparation. Tillage. This grain is grown as in other counties, on lands not good enough for wheat, to which however it is giving way. Rye is generally sown on a wheat stubble, for sheep feed; on one earth, immediately after harvest, ploughing in the stubble, and harrowing in the seed. When this grain is intended for a crop, the same preparation (a fallow) is given as for wheat, on lands in severalty. Mr. Darnton, of Babraham, has grown rye instead of wheat, on lands subject to mildew. Some rye is grown, on fens about Wisbech, for sheep feed.

Quantity of seed. One and a half to two bushels per acre.

Produce. Four to six Co. per acre. Crop. Worth of feed 20 to 30*s*.

Mr. Wedge, of Westley Bottom, has grown ten Co. per acre.

SECT. V.—BEANS.

PREPARATION. Tillage. In open-field beans generally succeed barley or wheat, and are put in on one earth. In uplands in severalty, they are grown often in the same course as in open-field, but where clover has been introduced, they are often sown where that plant failed, or as a substitute to it, when it is wished to avoid its too quick repetition. In fens, beans are grown on an oat stubble, or the first crop after a layer. Autumn tillage is seldom given, even on uplands, for beans; the reason assigned is, that lands ploughed previously to winter, "pan" more in the spring, than those which had laid whole all winter.

Sort. Ticks, those generally sown.

Quantity of seed. If broad cast, one Co. sometimes more.

Time of sowing. Beginning of February to end of March.

How put in. In open-field, broad-cast and ploughed in, on ridge, sometimes on stitch. In lands in severalty, same as in open-field, generally speaking. Dibbling.—Mr. A. Young gives the following account of dibbling beans in 1800, at Long-Stow. "Mr. Moscrop, bailiff to the Rev. Dr. Thompson, of Long-Stow, dibbled in 1800, four acres of beans; he ordered three in a hole, but this was changed after a time for one in a hole; throughout the drought of that year, plants, where only one in a hole was set, were poor and puny, much inferior to three; nor was this the first time that he made the same remark. These succulent plants, he observed, attract moisture when they grow together, and assist each other.

"Mr. Moscrop, (who came from Tweed-side), has had many years practice in drilling, in various of its branches, and assured me, (A. Y.), that all the best farmers have found that instead of drilling taking less seed than broad cast, it requires rather more, and it is the same with dibbling beans," (Annals, v. 42 and 44.) Rev. Mr. Leworthy of Harston has dibbled beans one row on a flag on an old layer, and had great crops. Mr. Lawton, of Wisbech, puts them in every fourth furrow. Mr. Fryer, of Chatteris, has put them in (on uplands) every other furrow, but did not succeed better than by broad-cast. I saw many which were put in every third furrow. Lord Hardwicke, at Wimpole, drills beans at 20 to 22 inches. Mr. A. Young speaks of some his lordship had in 1800, drilled on two feet on ridges, and that they were very fine. (Annals, v. 42).

Culture while growing. In open-fields, generally only sheep fed; it is said sheep will not touch a bean, while there is a spire of any thing else to be had; they keep this crop in appearance, in garden neatness; but at harvest it is far otherwise. In lands in severalty hand-hoeing is given; but the crops are here also generally very foul, owing to their being broad-cast and so thick a plant. Mr. Lawton, of Wisbech, horse-hoes his beans (put in every fourth furrow), but *sheep-hoeing* is preferred by nine out of ten Cambridgeshire farmers.

Harvest. Reaped or pulled, by some mown; all tied up in small sheaves, some with their own straw, some with other straw, and by a few with rope-yarn.

Produce. Mr. Vancouver says four Co. one bushel per acre. From 10 to 12 Co. are frequently grown. Mr. A. Young, in his "Account of average Produce of Great Britain," states beans in this county six Co. The straw of this crop, esteemed in other counties of great value, being excellent for horses and lean cattle of any kind, is in no estimation here, and is applied to littering yards only.

SECT. VI.—PEASE.

PREPARATION. Tillage. In open-field pease are usually grown instead of barley or beans, on one earth. On lands in severalty, they are grown after barley, and frequently on light lands upon a layer.

Sort. There are no sorts peculiar to the county, the white, grey, and dun are common.

Quantity of seed. About five bushels broad-cast, drilled and dibbled, and not more than two to two and a half bushels, per acre.

Time of sowing. February and March.

How put in. In open-field, almost universally broad-cast. On land in severalty also broad-cast, but some are dibbled, and some few drilled. Mr. Mortlock, of Abington, puts them in every third furrow, and has found them a very uncertain crop, liable to be taken off by the fly, &c. Mr. Darnton, of Babraham, has drilled them at nine inches. Mr. Shepherd, of Chippenham, also drills them, and both speak well of the practice.

Culture while growing. When broad-cast none, of course are very foul, and many I viewed, miserably so, not promising a crop sufficient to pay rates and taxes. The dibbled crops somewhat better, but not sufficient hoeing bestowed on them; indeed on lands subject to weeds, this crop can be kept clean only when drilled at wide intervals, a plan the Cambridgeshire farmer has not yet adopted.

Harvest. Taken up by a pease-make, and left in small heaps, and turned as often as the weather may make it necessary.

Produce. About five Co. per acre, vary from three to eight Co. Mr. Vancouver says, four Co. three bushels. Mr. A. Young, in his "Account of Produce of Kingdom," says average of pease in this county, five Co. per acre.

SECT. VII.—TARES.

The county is indebted to B. Barker, Esq. of Little Swaffham, for the introduction of this valuable plant, the culture of which, however, does not spread equal to its merit; no reason assigned, but it may be presumed the partiality for corn in the sack is the real cause.

Preparation. Tillage. Usually a wheat stubble, ploughed in immediately after harvest, seed harrowed in broad cast. Drilling them, which in Suffolk has been proved an excellent plan, is not here practised.

A spring crop of corn usually succeeds them, and turnips sometimes follow them in the same year (on a small scale).

Sort. Common winter and spring tare.

Quantity of seed. Two bushels per acre.

Time of sowing. Autumn. August and September, the former better. Spring, March and April.

Application. Cut green and given to horses, beginning those sown in autumn, about the middle of May; there are few farmers who have more than a spring and an autumn sowing instead of two or three of each, for providing a succession through the summer. They are sometimes seeded, and produce from three to six Co. per acre, they are seldom made into hay, as they receive more injury from rain than any other grass does. They are very often sown for sheep feed, and by some few are made a regular shift, (thus applied) in their course of cropping. Instance, Colonel Adeane, (and formerly Mr. Darnton), and Mr. Philips, at Babraham. Horses can no way be kept so cheap and so well as on green tares; and where straw is plentiful, an immense quantity of valuable muck, may during summer be raised by feeding them in a well littered yard, the practice of the best farmers in Norfolk and Suffolk.

N. B. Rev. Mr. Leworthy, of Harston, thinks tares great impoverishers of land, even when cut green. I have heard the same observation in Suffolk, from an occupier of a lightish soil.

SECT. VIII.—COLE.

ON uplands. This plant is in some few places grown on uplands, where the preparation for it is the same as for turnips, and wheat generally succeeds it when it stands for a crop, but the great cultivation of cole is in the fens, where it is usually the first crop after paring and burning.

Manure. Mr. Edes, of Wisbech, mucks for cole, when he does not burn for it. When a second crop of cole is grown, it is mucked for out of yard, 12 to 14 loads per acre.

Quantity of seed. One-fourth to one-half a peck per acre.

Time of sowing. About Midsummer if for feed, if for crop, about August.

How put in. On one earth if after burning, immediately after which the ashes are spread; the seed harrowed or bushed in, by some rolled in. Many farmers spread the ashes as soon as burnt, and directly plough them in, and give another earth at seed time, others spread them as soon as burnt, but not plough them in, till seed time. There are various opinions on these methods, the observations on them by individuals of the county, are placed in the chapter of Paring and Burning, and I had occasion to insert some observations on them, when speaking of cropping the fens. (See Chapter on Course of Crops.)

Culture while growing. If for a crop is set out by hoeing, as turnips are, but at less distance. Is seldom weeded, but is often transplanted from thick to thin places.

Harvest. When cole stands for a crop, it is reaped carefully and laid on a stubble, and threshed in field, being drawn on sledges having sail cloth lining, to the place of threshing; plenty of help is employed, only fine weather suiting the business, and notwithstanding all possible care, much of this crop is lost by shedding. The work is generally done by the day.

Produce. Four to six and seven Co. per acre, sometimes more. Worth to feed, about 40*s*. per acre, on average; but varies from 20*s*. to 60*s*. Improves from six to eight sheep about 10*s*. each. Is of more value than turnips; is improved by that which destroys turnips, i. e. frost.—Begin feeding it about Michaelmas. Is given to ewes after they have lambed, (will injure them before lambing), and to fattening sheep. Mr. Wedd, of Trumpington, thinks cole should be fed by hurdling it off, a piece at a time, and that it should be given to old sheep. Mr. Scott, of Chatteris, thinks the sheep should be turned into the whole field of cole at once. Mr. Boyce, of Whittlesea, hurdles it off if he gives it to store-sheep, but turns into the whole at once, when he gives it to fattening ones; for when hurdled off and fed bare, the sheep bite so close as to eat the crown of the plant; which they prefer to the leaf, and will not eat the latter afterwards, but "pine for the former, and will not in consequence get on well." When intended for a crop, if fed first, it must not be after February. It is apt to garget sheep while they are in young; the usual remedy is bleeding them; most farmers, however, do not attempt a cure, but kill them. The cole also affects the lambs before yeaned. This crop is the sole dependance of fen-farmers, their whole success depends on it, as that of the Norfolk farmers does upon the turnip.

Disorder. When cole it stands for a crop in fen, is subject to blight.

SECT. IX.—TURNIPS.

The cultivation of this plant has hitherto been very confined in this county, owing to so great a part of it having been in open field, the system of cropping which, and the flock masters' right of going over the whole fallow-field, precluding it; the Cambridgeshire farmers, however, appear as sensible of the value of this root as the Norfolk ones, having introduced it into the rotation of cropping adopted on new enclosures, on suitable soils, where it is likely to prove, as might be expected, a great acquisition; one circumstance is indeed to be lamented, namely, that this plant does not succeed on the best lands of the county; namely "the white lands," the soil of which is very fleet, and the substratum a clunch; at which when the root arrives, the turnip dies; another objection to turnips on this soil, is, that on the least wet they rise very dirty, and the land poaches on the tread of sheep, even so as materially to injure them; hence did not turnips on such lands go off in the manner stated, they could not be fed a season through, either on or off them without injury to stock and land. Mr. Wedd, of Trumpington, says "turnips will not answer on white lands." Mr. Darnton, of Babraham, has had his turnips go off when the root comes at the substratum of his soil, a chalk, and this crop has always been a very uncertain one with him, owing to the fly and locust.

Preparation. The usual one of four or five earths; the preceding crop generally wheat; fine tilth and garden cleanness are aimed at. The best farmers give the first earth before winter, but it is not the general practice.

Manure. Fold or muck; if the latter, that of farm-yard, ten to twelve loads per acre ploughed in at seed time. Mr. Shepherd, of Chippenham, manures for them with oil dust drilled in with the seed, about eight bushels per acre. Rev. Mr. Lane, of Carlton, cannot get a fine tilth after *folding*, therefore mucks for turnips. Mr. Darnton, of Babraham, mucks for turnips. Rev. Mr. Leworthy of Harston, manures for them with mold and lime, and says that plan secures a crop.

Sort. None peculiar to the county; Mr. Shepherd, of Chippenham, has largely cultivated the Swedish turnip, and he speaks highly of it. Mr. A. Young, (Annals) mentions a fine crop Mr. Shepherd had of this sort in 1803, and attributes its escaping the fly to manuring and folding amply. Rev. Mr. Leworthy, of Harston, has also grown it, and for seed. Mr. Edes, of Wisbech, is a cultivator of the Swedish turnip, and has found it more subject to the fly than any other. Game prefer them to any sort.

Quantity of seed. About a quart an acre.

Time of sowing. Through June.

How put in. Broad-cast and harrowed in; and when mucked for with long muck, are rolled in. Mr. A. Young speaks of the Rev. Mr. Lane having in (1799) drilled one acre at eighteen inches; and that it kept 100 sheep three weeks and four days; large Cambridgeshire sheep that had been at turnips before; the crop far superior to the broad-cast adjoining." Mr. Shepherd, of Chippenham, drills turnips at twelve inches; and has proved that it matters little whether they be put in deep or fleet; if the former, the only difference is, that they come to the hoe a few days later. Mr. Wedge, of Westley Bottom, sows broad-cast, and cuts them into drills by horse-hoes, at the usual time of hand-hoeing.

Culture while growing. Hoeing twice, but as the art is not well known by the inhabitants, the work is done by persons who travel the country for that purpose, and who make great earnings; it cost a farmer in the neighbourhood of Wimpole 25*s.* per acre in 1803, for hoeing his turnips by his own people, who would not take them by the acre, but did them by the day, and it was thought wrought hard; the usual price in turnip countries is 5*s.* to 7*s.* per acre for twice hoeing. The Rev. Mr. Jennyns, of Bottisham, always has his turnip-hoers carry each a bag of cole-seed, when hoeing the second time, to sow vacancies in his turnip crop.

Application. On light soils fed by sheep; on heavy lands drawn for bullocks, &c. Rev. Mr. Leworthy, of Harston, grows turnips for seed, has had 10 bushels per acre, and sold them at 30*s.* to 36*s.* per bushel; and retail at 8*d.* per lb, sold some to London at 28*s.* per bushel; has grown of Swedish turnip 8 bushels per acre seed; then *wheat*.

SECT. X.—CLOVER.

Preparation. This plant is sown in this county as in most others; usually with the first crop of spring corn, after a fallow or after turnips, and by some persons in the open-field, where that system will not allow any other application of it; it is sown with the *last* crop in the course, for a little sheep feed (in the spring) after feeding which, the land is fallowed; it is also occasionally sown on fallow-wheat, in the spring after the wheat is sown; good clover is thus obtained, the wheat stubble nursing it in the winter.

Mr. Shepherd, of Chippenham, says the best layers are from seeds sown on wheat or rye crops. The "white lands" are very favourable to clover, and produce abundant crops of it. Mr. Ring, of Bottisham, says clover will not stand on the heath lands about Newmarket, lately broken up; whether it will after they have been in tillage some years, is to be proved.

Manure. The best farmers muck their young clovers, and say it pays well for it.

Quantity of seed. 10 to 12 lbs. per acre.

Time of sowing. With the crop if a spring crop; if on wheat, about March or April.

How put in. Harrowed in with the spring crop, rolled in if on wheat.

Produce and application. A ton to a ton and a half each mowing on lands, upon which it is newly cultivated, on those where it has been often not near so much; it is however more generally fed, and will keep four to seven sheep per acre, from about May day to wheat sowing. It is also by some few, cut green and given to horses; much also is seeded, and has occasionally paid well, but it is a lottery. I heard of no experiment by which the comparative value of these applications could be ascertained, nor after which process is obtained the best wheat. The Rev. Mr. Leworthy, of Harston, mows and then seeds; had two tons per acre in 1804. In many of the new enclosures great breadths of clover have been thus managed and succeeded, although it is deemed an exhausting system, and one that on an average of years would not succeed. If the second crop has a good make, it has been found little inferior in quality and weight to the first, but it is not thought this will be the case on a repetition of the plant. Mr. Francis, of Childersley, has better wheat after clover mown, than fed.

SECT. XI.—TREFOIL.

PREPARATION. It is generally sown with clover and ray-grass, and often by itself, instead of the former.

Seed. When sown alone 10 to 12 lbs. per acre, if with clover and ray-grass, from 6 to 8 lbs. of trefoil.

Manure. Good farmers wish to manure this layer, (which they do in the winter,) if intended to be succeeded by wheat, which crop as well as the trefoil is benefited by it.

Time of sowing. Same as clover.

Application. Generally fed by sheep, if not seeded; produce inferior to clover, and when seeded equally uncertain as to produce. Wheat is not so good after trefoil, as after clover.

SECT. XII.—RAY-GRASS.

Preparation. Is sown on the uplands of the county with clover and trefoil, on mixed and light soils; and in the fens, it forms the greatest portion of seeds of their layers. It is often sown by itself in fens, and is the great dependance of the fen-farmer.

Quantity of seed. On uplands, when sown with clover and trefoil, half a peck per acre. On fen, where it is often sown with other grasses, one bushel of this is sown, and when with Dutch-clover only, or by itself, two bushels.

Manuring. In fen where the layers consist, as I have observed, chiefly of this grass, manuring is given generally immediately after the hay of the first year is off.

Time of sowing and how put in. As clover.

Application. On uplands, generally fed by sheep, as it is sown there on lands applied to that stock chiefly, and lays from two to five years. In the fens it is applied to all kinds of stock, and lays there also from five to seven years; being however when sown by itself, seeded as well as fed; on this point there are various opinions, but the more general practice is to feed with sheep the first year, and mow for seed, the second.

SECT.

SECT. V.—CROPS NOT COMMONLY CULTIVATED.

1st, *Sainfoin.*

THIS valuable plant is cultivated in many parts of the county, and with the success and profit every where attached to it under judicious management on suitable soils, viz. such as are dry and have a chalk bottom.

Preparation. Usually fallow or turnips, succeeded by barley, with which the sainfoin is sown. Mr. Darnton, of Babraham, used to sow it on rye, viz. the spring after sowing the rye, and is then rolled in. Mr. D.'s neighbour, Mr. Philips, of Bourn Bridge, sows it also with rye, but at the same time he sows the rye. Mr. Wedge, of Westley Bottom, sows it with rye. Professor Harwood, of Bartley, sows it with barley. Mr. Sanxter, of Horse Heath, sows it on summerlands without a crop.

Manure. Cinder dust the best manure. Professor Harwood lays on about 100 bushels per acre in the frost, cost 2*d.* to 2*d*½. per bushel, including carriage 12 miles.

Quantity of seed. Five bushels per acre alone. Professor Harwood three bushels sainfoin, trefoil, half a peck. Mr. Sanxter four bushels alone.

Time of sowing. In the spring, with barley, with the exceptions noted.

How put in. Harrowed in with the barley, rolled in if on rye, sown the preceding autumn, and the sainfoin sown in the spring.

Application and produce. First, Mown for hay, which is excellent; great care is necessary that it be not made too much. It requires only turning on the swarth, is gotten up so green, and heats on the stack to a degree that would alarm one not used to it. All stock are fond of it, and it is as valuable as the best meadow hay. The after grass is fed by sheep, but many think it should not be very closely fed. When it stands for seed, produce three to six Co. per acre. When for hay, from one to two tons per acre. It is a remark of a gentleman of Landwade, that, "sheep ruin it I make it into hay, and get a ton an acre." Mr. Wedge, of Westley Bottom, "sheep destroy it." Professor Harwood, makes it into hay. Feeds the rowen till Michaelmas. Mr. Sanxter mows it and does not feed the rowen. Mr. Hammon, of Ashley, mows about two tons per acre, and feeds after-grass with sheep; he has grown eight Co. per acre *seed.*

Mr. Eaton, of Stetchworth, says, sheep injure it if fed near winter.

About Babraham neighbourhood it is made into hay, and never fed close. The Rev. Mr. Lane, of Carlton, gives it made into hay, and cut, to horses; grows great crops of it.

Duration. At Landwade, remains about nine years.

At Ashley. About seven or eight years. (Mr. Hammond).

At Stetchworth. If it remains more than four years, the crop which succeeds it, (oats) is likely to fail. (Mr. Eaton).

At Babraham. Lasts about seven years (Mr. Darnton).

After management. At Landwade, it is broken up in February, and fallowed for cole, for crop; then barley twice taken, and returned to field course of cropping. At Stetchworth, Mr. Eaton breaks it up, and sows oats, then fallows. Sainfoin is sown again after one course of cropping of the district is taken. At Babraham, Mr. Darnton

ton, used to break up for pease, then took rye and lays down again with trefoil only.

SECT. II.—LUCERN.

I heard of none except from Mr. Darnton, of Babraham, who formerly grew it, and with great success; used to mow it four times, had each time equal to a crop of clover, yet discontinued it. It was too much trouble to keep it clean, he sowed it broad-cast with summerland barley. Gave it to horses in a yard; had made no experiment to prove its real value, &c. &c. the soil light, and gravel bottom. The Rev. Mr. Lane, of Carlton, intends growing it on a large scale.

SECT. III.—SCOTCH KALE.

The Rev. Mr. Lane, of Carlton, some years back grew this plant on both light and heavy lands, and speaks highly of it, but does not now cultivate it; he gave it to sheep, of which he then kept a large quantity.

SECT. IV.—POTATOES,

ARE cultivated largely in the fens and uplands of this county, and are as profitable a crop as any grown. At Whittlesea, Chatteris, Soham, &c. &c. they are grown on a large scale; almost all small occupiers cultivate them. March is also noted for their cultivation.

Lord Hardwicke, says Mr. Young, (Annals, v. 43), "in 1799 had 58 bushels of wheat per acre, after potatoes, on strong, wet land, but well hollow-drained.*

Preparation. Two or three earths. They are generally grown instead of beans or barley. Mr. Boyce, of Whittlesea, has them in place of wheat. Mr. Wedd, of Trumpington, after cole, fed off. At Soham, wheat is taken after them. Many grow them for several years in succession.

Manure. No crop pays better for manure. Farm-yard muck usually applied, about fourteen loads per acre ploughed in at planting the crop.

Sort. Red nosed kidney, rough red, ox noble, &c. &c.

Quantity of seed. About six sacks per acre, cut into pieces about the size of an egg, each piece having "an eye" to it. Mr. Fields, of Upwell, plants eight sacks per acre; Mr. Boyce, of Whittlesea, twelve sacks.

Time of planting. Latter end of April, or beginning of May.

How put in. By many placed in every third furrow, each piece at about four inches asunder, and ploughed on to. At Soham they are dibbled in. Mr. Fields, of Upwell, puts the sets in at twenty-three inches asunder in the rows, and thirty inches from row to row, and on the ridge. Mr. Edes, of Wisbech, rows at three to four feet asunder.

Culture while growing. Horse and hand-hoeing. Mr. Field hoes them three or four times.

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* At Whittlesea, labourers give 50*s*. per acre for the use of land for growing a crop of potatoes, and often get 100 sacks per acre.

Harvest. Ploughed up and surface harrowed, and are gathered by women and children. At Soham are taken up by three-tined forks. At Whittlesea in the same way at *6d.* per sack. Are protected from frost by being covered with straw, then earth, then straw again and thatched, laid in a pit, or on a dry spot, so that water runs from them.

Application. Sell if possible, as no stock will pay nearly the usual sale price of them. If cannot sell, give them to all kinds of stock, as all do well on them. The best system for consuming them is in the spring. Mr. Field, of Upwell, gives them to cows and sheep, and esteems them a very profitable crop thus applied. In the time of scarcity this root was recommended as a substitute for flour in bread, and the general opinion was in favour of the measure, that it was economical; the following letter on this subject, being from a gentleman of the county, may not perhaps be improperly placed here; the letter alluded to was by the Rev. Mr. Metcalf, of Ely, and is as follows. " To ascertain the value of potatoes, in making bread, a loaf was made of five pounds of good flour, and another of three pounds four ounces, of the same flour, mixed with one pound twelve ounces of potatoes; when boiled and mashed, equal quantities of yeast, salt, and water, were put to each loaf, but in making up, it was found that the loaf of flour required more water, which was accordingly added, and as the mixed loaf had already too much, three ounces of flour were added to remedy the defect. On weighing them when cold, after baking the same time in the same oven, it was found that the flour loaf weighed eight pounds six ounces, and the mixed one only five pounds fifteen ounces. Now as five pounds of flour produced eight pounds six ounces of bread, in the same proportion the three pounds seven ounces of flour would have made five pounds twelve ounces of bread, hence the one pound twelve ounces of potatoes may be said to have produced only three ounces of bread." (Annals of Agriculture, v. 25, p. 558.) Mr. Edes, of Wisbech, thinks hogs pay better for potatoes than any other stock does. Mr. Darnton, of Babraham, gives them to stock when he cannot sell them at 8*d.* per bushel, as he says no cattle will pay more than that for them; he thinks, except they are prepared by some culinary process, they improve stock very little. At Wimpole, they are given to all stock. Lord Hardwicke in the scarcity relieved the poor greatly by selling them potatoes at 1*s.* 6*d.* per bushel, when the price was 4*s.* to 5*s.* per bushel. Mr. Boyce, of Whittlesea, gives them to bullocks, calves, and pigs; and says, a bullock that will fatten to about 50 to 60 stones, will eat about two bushels per day and hay; he never gives them till spring. Bullocks should be kept warm, while eating them; calves do well on them, but they should be cut.

Produce. In fen from 80 to 150 and 170 sacks, of three bushels each.

In uplands, 170 to 180 sacks have been grown, but these are extraordinary and rare crops, the average produce not more than one-third of them. Price from 8*d.* to 2*s.* 3*d.* per bushel; in the scarcity, 10*s.* 6*d.* per sack. At Whittlesea, produce about 84 sacks. Mr. Wedd, at Soham, in 1804 had sixteen acres, and sold part of them at 16*l.* per acre. Mr. Boyce, of Whittlesea, values them at 2*s.* 6*d.* per sack on an average of years, the purchaser to take them up. Mr. Edes, of Wisbech, would sell at 2*s.* 6*d.* per sack, rather than give them to stock. Lord Hardwicke has grown 166 sacks per acre.

Distempers. Potatoes (particularly the finer sorts), are subject, (says Mr. Scott of Chatteris), "to be curledrooted, by which the produce is much reduced;" when thus affected, (Mr. S. says) "the main root is eaten off from the sets, by some worm or insect." Mr. S. has an idea that this disorder might be prevented by steeping the sets in some nauseous preparation.

SECT. V.—CARROTS AND PARSNIPS.

I saw none of either forming part of the farmer's course of cropping. Lord Hardwicke tried them some years back on a small scale on his strong clays, and obtained great crops, but the particulars were not known by my informant, the bailiff.

Mr. A. Young (Annals, v. 42), thus writes on carrots, at Wimpole. "On the strong clay of Wimpole, the Earl of Hardwicke tried in 1798 half an acre of carrots, to see if they would succeed on a soil deemed so utterly improper for that root; they succeeded well, and produced a full crop, but the number of bushels could not be ascertained, from the depredations of people stealing them; wheat succeeded and produced a great crop. In 1799 the trial was repeated, and a comparison made with parsnips, these succeeded well, but the carrots were eaten by the white snail; the parsnips were sold to the poor at 1*s.* a bushel, and proved a great assistance to them in the scarcity; they wisely took the hint, and have many now in their own gardens. Lettuces and radishes were scattered amongst them, which afforded the poor many sallads. The wheat that followed this root as great as after any other preparation. Mr. Edes, of Wisbech, says, carrots are so subject to the worm, that it does not answer growing them on his farm.

SECT. VI.—CABBAGES,

Are not grown to that degree in the county they might be expected to be, when the quantity of land suitable to them is considered. Mr. Ground, of Whittlesea, Mr. Edes, of Wisbech, Mr. Jennyns, of Bottisham, and Mr. Thorpe, of Chippenham, grow them, and I saw a few at Wimpole.

Preparation. Same as for turnips.

Manure. Is always given for them. Farm-yard muck, twenty to thirty loads per acre.

Sort. Drum-headed. Mr. Jennyns, of Bottisham, plants the red cabbage, and finds that caterpillars will not attack them, so soon as they will the drum-headed.

Seed. About 6000 plants per acre. Mr. Field, of Upwell, sows the seed; it costs 3*s.* per lb. in London; one-fourth (9*d.*), will produce plants enough for an acre; the usual price per 1000 of plants is 2*s.* 6*d.* (sometimes much more); cost of plants therefore for an acre is at least 15*s.* shewing that raising the plants answers well. Mr. Field plants in the middle of June, 7000 per acre.

Time of sowing. July after rain, some sooner.

How put in. Generally on four furrow ridge, at two to three feet distance on the ridge, Mr. Field, of Upwell, (in fen) puts them in at 2½ feet square, and on the flat.

Expense. The work being usually done by the day, I could not come at the expense per acre. A Suffolk cultivator thus estimates it (on a heavy wet loam) exclusive of rent, tithes, rates.

	£.	s.	d.
Five ploughings	1	0	0
Two harrowings	0	0	6
Manure 20 loads	2	0	0
Seeds raised	0	1	6
Planting	0	3	0
Deficiencies	0	0	6
Hand-hoeing	0	4	0
Horse ditto	0	4	0
Cutting and Carting	0	15	0
	4	8	6

N.B. Mr. A. Young, observes that, " only 15*s.* of the 2*l.* charged for manure, should be charged to the cabbages, as the succeeding crops receive the remainder."

Here a charge for *cutting* the cabbages; they should be *drawn*, or they shoot again, and injure the land."

Culture while growing. Hoeing by hand in the rows, in the intervals by ploughing *from* the plants with a common plough, and *to* them with a double-breasted one. Mr. Field moulds up his (on the flat), by a double plough, and hand-hoes the rows three times.

Value and application. Their value estimated at much more than that of turnips, most growers think double. Mr. Shepherd, of Chippenham, has had them on a poor moor, (which would scarcely bear a man), worth 10*l.* per acre. They may be given to every kind of stock; if to cows the outside and decayed leaves should be taken off. Mr. Edes, of Wisbech, gives them to sheep in the spring, and prefers them to turnips. They are thought better than turnips for weaned calves.

SECT.

SECT. VII.—HEMP.

THIS plant is cultivated largely, and appears to pay so well, that it is not easy to account for its growth not being still more extended. It is found at Upwell, Guyhorn, Ely, March, Manea, Chatteris, &c. &c. Its being now almost generally esteemed a great exhauster, and requiring constant mucking, may perhaps be the great check to its cultivation; formerly, however, it was not esteemed an exhauster, for Dr. Nasmith, of Leverington, informed me he had seen old leases stipulating that in the last two years the land should be cropped with hemp. The growth is supposed to be at this time increasing. Mr. Vancouver says, in parts of Cambridgeshire, this plant is not *now* esteemed an exhauster; but an ameliorator. I did not find this opinion acceded to generally; I met indeed individuals who thought it did not impoverish land which "suited" it.

Preparation. A fallow, with all the ploughing, harrowing, picking, &c. that can be bestowed from the preceding autumn; when one deep ploughing is given till May; it is then sown, the preceding crop having been flax, beans, or wheat, and the succeeding one often wheat, sometimes barley; and hemp is occasionally taken twice successively, then wheat. Flax sometimes succeeds hemp, then wheat; and better wheat after seeded hemp than after maiden hemp, as the former affords a manuring from its leaf which is left on the land. The land when sown should be in garden cleanness, and as fine as if for onions; free from every weed, rubbish, &c. The soil which best suits it, is a strong loam. This crop leaves the land perfectly clean, having killed every thing in it.

Manure. Fifteen, twenty, to thirty loads per acre, from farm-yard, and ploughed in at sowing the crop.

How put in. Broad-cast.

Quantity of seed. 3½ bushels to one Co. per acre.

Time of sowing. Middle of May.

Culture while growing. None. It smothers every thing.

Harvest. Commences about August. Is pulled about twelve or thirteen weeks after sowing by women, tied up at both ends in bundles as large as the two hands can grasp, and is immediately "dyked," or as it is called "water-retted," i. e. sunk in a ditch and covered by flags (called sods); the water should be about ankle deep above the sods; should lay from four to ten days in water, till it works like new beer and rises up, when the bark will strip off the stalk; should be a standing water, or water made so by being "stanked," at each end; some water will bring it forwarder than other. When taken out of the water, (on doing which to a *moment* of the proper time, depends every thing), it is untied and set on an end to dry, then spread on grass land (short grass) parallel to each other; turned after every rain, or the worm will injure it, for four or five weeks, then is tied into sheaves and shocked, one in the middle and four round; it stands till dry (requires turning) the barned or stacked, is dressed in sharp frost, or dry time in spring. By some it is only dew-retted, that is laid on the grass in the way, and for the time mentioned above, the dyke being omitted, but hemp thus managed is from 1*s.* to 2*s.* per stone less value. If seeded, stands till October, viz. about five weeks longer than if not seeded; it is not then water-retted, but when pulled, shocked till dry, threshed in field, and the sheaves stacked till spring, then spread on grass (as here described) and dressed.

Separating male from female plant, or as it is called, selecting, is not now practised, owing to the expense, and to the carelessness of the labourers. Male used to be pulled when in flower. Mr. Low, of Wisbech, observed to me that the management of hemp is so difficult, that he believes it can be understood only by practice, not by the *best written directions*. Crows and pigeons are great enemies to this plant.

Produce and value. Forty to fifty stone, (14 lbs.) per acre from the break, from which the farmers sell it. Mr. Vancouver says average 48½ stone. Average worth per stone 5*s*. to 7*s*. Is sold at Wisbech and Ely. Short hemp worth about half of long hemp. If stands for seed, produce about three Co. per acre. Crops vary from 20 to 100 stone, says Mr. Scott, of Chatteris. Mr. Lawton, of Wisbech, thinks average crop worth about 6*l*. per acre, the purchaser pulling and being at every subsequent expense. The produce is sometimes reckoned by bunches, and 550 bunches were stated to me as an average crop. 100 bunches equal about nine stones, consequently 550 bunches equal 49½ stones. In 1805, at Wisbech, the prices were, shorts, 2*s*. maiden, 7*s*. 6*d*. seeded, 5*s*. to 6*s*. per stone. The merchants buy it at the farm-houses, and sell it at monthly markets at Wisbech. Dew-retting produces more, and the expenses are less than water-retting, but the hemp sells from 1*s*. to 2*s*. less. Standing for seed lessens the quantity as well as the quality. Maiden-hemp 1*s*. 6*d*. to 2*s*. per stone more than seeded hemp, and produces one-fourth more. Another informant says, average produce forty stone. Male plant worth 2*s*. per stone more than female; but, he says also, the former practice of separating them discontinued.

Application. Maiden-hemp sold for cloth. Seeded-hemp for ropes.

Expenses per acre.

	£.	s.	d.
Rent*	2	0	0
Tithe (by act of parliament)	0	5	0
Rates 5*s.* in pound on two-thirds of rent	0	7	6
Manure†	0	7	6
Five ploughings and harrowings	1	5	4
Seed one Co.	1	1	0
Sowing	0	0	4
Pulling about‡	0	17	6
Watering about	0	15	0
Grassing about	0	10	0
Breaking, 1*s.* per stone on crop	2	5	0
Carriage to market and expenses§	0	2	6
Total carried forward	£9	16	8

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* Dr. Nasmith, of Leverington, says 5*l.* per acre are given often for liberty to sow hemp, the hirer having possession no longer than till the hemp is off. The farmer sometimes takes turnips the same year.

† Half expenses, (viz. labour only) on 30 loads, which is thought to be as much as ought to be charged to the hemp, as wheat succeeds it to advantage without muck.

‡ 3*s.* 6*d.* are given for pulling 100 bunches, (the bands of which are 2½ feet long) and it amounts at that rate to about 17*s.* 6*d.* per acre, viz. 500 bunches at nine stones per 100 bunches, is 45 stones. At Wisbech, I was told pulling was only 2s. 6*d.* per 100 bushels.

§ Supposing this 20*s.* on a waggon load, and that 40 cwt. (equal to 20 Co. of wheat at 16 stone per Co.) may be carried on a waggon, 45 stone, 5½ cwt. the produce of an acre will cost about 2*s.* 6*d.*

	£.	s.	d.
Expenses brought forward	9	16	8
Produce.			
Say 45 stone at 6*s.**	13	10	0
Profit per acre	3	13	4

It appears from these data that hemp being sold by the farmer from the break, pays him a profit of 3*l.* 13*s.* 4*d.* per acre. A deduction however perhaps ought to be made for the value of the muck, as I have charged the labour on it; only my reason is, that in many of the districts where hemp is grown in this county, muck is so plentiful, that it lays year after year in mountains, unemployed, and without sale; and may therefore be said to be of no saleable value; the reader may make such deduction from the profit here stated, as he may think proper. I should have been glad of being able to carry this account of hemp, through the manufacturer's hands, had I been furnished with materials.

To compare the farmer's profit on hemp with that which he would probably receive from the application of the same land to other crops, usually grown on it, I inquired the average product on hemp-lands when under wheat, barley-big, (which is grown instead of common barley), oats and beans, and was told at Upwell, as follows, on an average; barley-big, 10 Co.; wheat, 8 Co.; oats, 15 Co.; beans, 8 Co.; and the expenses on these crops; as under,

	£.	s.	d.
Barley-big. Rent, rates, tithe, and manure, as for hemp	3	0	0
Three ploughings and harrowing	0	15	4
Carried forward	3	15	4

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* Bounty, 3½*d.* per stone, never claimed.

		£.	s.	d.
	Brought forward	3	15	4
	Seed three bushels, at 12s. per Co.	0	9	0
	Harvesting	0	10	0
	Carriage and expenses to market on 10 Co.	0	5	0
		4	19	4
Produce.	10 Co. at 12s.*	6	0	0
	Profit	1	0	8
Wheat.	Rent, &c. as before	3	0	0
	One ploughing and harrowing	0	5	4
	Seed, two bushels	0	15	0
	Harvesting	0	12	0
	Carriage and expenses at market on 8 Co.	0	4	0
		4	16	4
	Produce 8 Co. at 30s.	12	0	0
	Profit	7	3	8
Oats.	Rent, &c. as before	3	0	0
	Three ploughings (sometimes only one) and harrowing	0	15	4
	Seed, one Co.	0	10	0
	Harvesting	0	10	0
	Carried forward	4	15	4

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* Usually sells 3s. per Co. under common barley, straw set against threshing in this and following crops.

Carriag

	£.	s.	d.
Brought forward	4	15	4
Carriage and expenses to market on 14 Co.	0	7	6
	5	2	10
Produce. 15 Co. at 10s.	7	10	0
Profit	2	7	2
Beans. Rent, &c. as before	3	0	0
One ploughing and harrowing	0	5	4
Seed, five bushels, at 16s per Co.	1	0	0
Harvesting	0	12	0
Carriage and expenses to market on 8 Co.	0	4	0
	5	1	4
Produce. 8 Co. at 16s.	6	8	0
Profit	1	6	8

Recapitulation.

	£.	s.	d.
Profit on Barley-Big	1	0	8
Wheat	7	3	8
Oats	2	7	2
Beans	1	6	8
Profit on four crops 4)	11	18	2
Average profit on four crops, per crop	2	19	6½
Average profit on hemp, as shewn	3	13	4
Ditto on average of four crops, per crop	2	19	6½
Per acre more by hemp	0	13	9½

It appears from this comparison that hemp is more profitable than barley-big, oats, and beans, and less than wheat only; and that it is more profitable than the average of the four crops, per acre 13*s.* 9½*d.* yet the cultivation small, when the quantity of land in the county suitable to it, and its national importance are considered; add also what is often obtained, a crop of turnips or cole, in *the same year*, and hemp will appear an article far more lucrative than most crops. Taking the course, (a no uncommon one) wheat, hemp, repeated often, and the profit will be greater than from any other, being equal to 5*l.* 8*s.* 6*d.* per acre per year; thus profit on wheat, 7*l.*3*s.*8*d.* profit on hemp, 3*l.* 13*s.* 4*d.* together 10*l.* 17*s.* in two years; being 5*l.* 8*s.* 6*d.* per year. In the above estimates I have charged no interest on capital, no other incidental expenses; such as muck, &c. as they equally affect all the crops. Great as the advantage of hemp appears, it is not sufficient to cause any considerable increase in the growth of it; it is thought, the difficulty and trouble of managing it, as well as the opinion that it is an exhauster, are the grand checks to it. It should also be remembered that the rent here charged is much below that given by individuals, and that muck if bought at a dear rate, (as it is in many districts), is another great deduction: notwithstanding, however, all these circumstances, hemp is undoubtedly an article of profitable cultivation.

SECT. VIII.—FLAX.

PREPARATION. Tillage. This plant and hemp are cultivated on similar soils, and they have nearly the like preparation as to tillage, &c. it will therefore be only necessary to notice wherein they differ. If flax succeed hemp or wheat, only one deep ploughing is given, and that at seed time, the land being then made perfectly clean, by picking, &c. &c. and fine by rolling and harrowing. Hemp is however often the first crop, on one earth, upon breaking up grass land. A crop of cole for feed, or turnips are taken the same year, after the flax is off.

Manuring. None.

Quantity of seed. Seven to eight pecks. Riga seed, called also barrel seed, and that of a year old, called "rested seed," is preferred.

Time of sowing. About Lady-day.

Culture while growing. Weeded by women crawling upon their knees, the pressure by the weeders supposed beneficial; rolling would be injurious.

Harvest. Is pulled if crop be not seeded, commences about the latter part of July, viz. about fifteen weeks after sowing, when berry is yellow, if stands to be seed; is harvested about August, when it is red. In the first case it is taken immediately after pulling to dyke, in which it remains about 10 days, and is trampled daily by three men abreast, when taken out it is grassed for about , being turned after every shower, till it is of a blueish colour, and then barned. In the second case it is dyed for a few days, then stacked for about a fortnight, when the seed is whipped out against a post.

Produce, value and application—40, 50, 60 stones, or 2000 to 2500 beat, equal from 50 to 70 stones per acre. Mr. Vancouver states average produce 46 stones. Mr. Scott, of Chatteris, says 20 to 80 stones, i. e. 50 stone average. Value 9s. to 12s per stone. Maiden-flax is made into cloth. Seeded-flax into ropes. The cloth finer than hemp cloth, but not so strong. Much cloth is sold (by persons who do not value their reputation), as made all of hemp, which has a mixture of flax in it; to those unacquainted with the nature of these articles it may be difficult to account how it should answer the purpose to substitute that which is dearer (by nearly half), than the article itself, yet this fraud is lucrative, for,

Flax, seeded, produces from six to twelve bushels per acre.

Expenses per acre.

	£.	s.	d.
Rent*	2	0	0
Tithe (by act of parliament)	0	5	0
Rates	0	7	6
One ploughing	0	5	0
Harrowing, *1s.* sowing, *4d.*	0	1	4
Seed two bushels	1	7	6
Weeding	1	10	0
Pulling†	0	10	0
Watering and grassing	1	5	0
Breaking‡	5	0	0
Carriage to market and expenses§	0	3	6
	12	14	10
Produce, say 50 stone at 8*s.* 6*d.*‖	21	5	0
Expenses.	12	14	10
Profit	8	10	2

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* Land has been let by the farmer to the flax grower for growing one crop of flax at six guineas per acre, I heard of even 7*l.* and 8*l.*, the flax being off in time for the farmer to have a crop of cole, or turnips the same year.

† *6d.* for 100 beat, (alias sheaves) 2000 beat an average crop.

‡ 1s. *6d.* to 2s. *6d.* per stone, say 2*s.* per stone, on 50 stones.

§ If 40 stones of hemp cost for these expenses 2*s.* *6d.* 50 stones of flax may cost 3s. *6d.*

‖ Bounty 4*d.* per stone, never claimed.

If this statement be near the truth, it may be asked of this plant as well as of hemp, why is it not more cultivated; and the same answer may be returned, and in addition, that flax is acknowledged by all to impoverish land. Although a rich loam, in short the best land, be recommended for flax, it has succeeded on a strong clay at Wimpole, as appears by the following communication of Mr. A. Young, (Annals, v. 42).

" On the strong clays of Wimpole, the Earl of Hardwicke in 1797, tried half an acre of flax for experiment; produce 350 lbs. or 50 stones per acre which is a very great crop; it was seeded and then dressed, and spun, &c, the lands sown with barley and grass-seeds, and those crops were full as good as in any other part of the same field, after other preparations. In 1798 another piece, crop very good, but not ascertained; oats succeeded, which were equal to other crops of that grain, in the same field. In 1799, sowed half an acre more, which was as fine a crop as any, but lost by the wetness of the season; the rest of the field was under potatoes and turnips; after the flax was pulled, dunged that part as for the other crops; at present the wheat appears to be the best in the field."

SECT. IX.—BARLEY-BIG,

Is grown at Wisbech, Outwell, and neighbourhood, instead of common barley, and has the same preparation, tillage, &c.

Produce. From 10 to 15 Co. per acre, and is worth generally 3*s.* per Co. under the best common barley.

Winter barley.

Not much cultivated. Mr. Francis, of Childersley, thinks it will be when more known, as he has succeeded with it to his wishes.

Preparation. Mr. Francis, of Childersley, has fallowed for it, and has also had it after common barley.

Quantity of seed. Same as common barley.

Time of sowing. Directly after harvest.

How put in. Broad cast on one earth, if after another crop.

Produce and application. Fed by sheep in spring, till about the latter part of May, then is saved for seed, and produces three to four Co. more than common barley; price when in demand for seed, three to four Co. *above* common barley; when not wanted for seed, about 2*s.* *under* it. It produces much more feed than rye.

SECT, X.—LENTILS.

Some few grown.

Preparation. Are sown instead of barley, on any second crop; sometimes on a fallow. One ploughing at seed-time is given.

Quantity of seed. Two to two bushels and a half per acre.

How put in. Broad-cast, harrowed in.

Time of sowing. About Lady day.

Application. Made into hay for horses, or any cattle.

Cattle having water directly after eating them, are apt to be hoven. Are of less value than tares.

SECT. XI.—MUSTARD.

THIS plant is grown in the neighbourhood of Wisbech and Outwell.

Preparation. Often on grass land, on one ploughing. Sometimes in lieu of any second crop. Plough once at seed-time.

Quantity of seed. One half peck, or one pint per acre.

Time of sowing. Latter end of February, or beginning of March.

How put in. Broad-cast, harrowed three times before, and twice after sowing.

Culture while growing. Hoe if necessary.

Harvest. When blossom is red, (which is about August) reap it in about fourteen days, stack it in field, covering it with stubble. At Michaelmas thresh it.

Produce. About five Co. per acre, worth about 56*s.* per Co. A second crop is obtained from what shells of the first.

Effects. It always remains in the land, and by many I was told it is an impoverisher.

SECT. XII.—WOAD.

THIS plant is not now cultivated in the county, it was some years since at New Barns, Ely, by Mr. Tattershall.

I had the following information on this subject from the person who then lived with Mr. T. and saw the management of it, and who, though not absolutely the director of the business, appeared to be well acquainted with it. Mr. Tattershall had 120 acres under woad.

Preparation. Pasture land (that which Mr. T. applied to this plant was most excellent, worth as much as any in the county), broken up in January or February, by ploughing as deep as possible, barley succeeds it, then the usual cropping of the farm.

Time of sowing. February, dibble in at vacant spots.

Quantity of seed. About five bushels per acre.

How put in. Broad-cast.

Culture while growing. Weeded twice by women on their knees. Expense 40*s.* per acre first time; second time, not quite so much.

Harvesting. Pull off the leaves into skips, which are emptied into large tumbrils, and carried to mill;* which grinds them (as small seeds are ground). They are then made into balls about five inches diameter, and laid on to frames (made of splines at small distances), placed one above another, in open shed; when dried (when they will be reduced to one-fourth of their original size), they are piled together in an airy place to prevent their heating. In winter they are taken to mill again, and broken to pieces, then are removed to couch-barn, (which has a brick-floor and brick-sides four feet high, and latticed windows and shutters); are there watered and turned frequently, (turned as muck is) which causes a heat, stench, and smoke to such a degree, that only persons who have been accustomed to it can bear it; this operation requires a month or six weeks, and when "enough," the woad has the appearance of mouldy sheep-dung. A hogshead will hold 20 cwt. It is sold to Northamptonshire or London.

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* One mill is necessary to every forty acres.

Produce. From one to two tons per acre per year, at four crops; by the time the pulling of the first is finished, the second is ready, and so on.

Value. About 20*l.* per ton.

Application. Dying.

Expenses and profit. The former I could not obtain, but the person of whom I had the above information, assured me that Mr. T. informed him, he *cleared 10l. per acre*, after charging every expense, even to the shoeing the horses employed, as he expressed himself; 5*l.* per acre were charged as rent. The woad sold from 20*l.* to 25*l.* per ton.

Mr. A. Young, thus writes on the culture of this plant on this farm.

"Woad was cultivated some years ago, to a very considerable amount, on the fine farm of New Barns near Ely. The land was very fine pasture, some of the richest I have any where seen, and valued at two guineas an acre, rent. It was ploughed up (a bold undertaking) five inches deep and sown in April and May with this plant. Weeded with great care and attention, the weeders on their knees. In July the crop made; this as is well known, consists of the leaf, which is pulled thrice in a season; and ground under mill wheels that cut with wooden edges. It is then worked into balls, two men doing as much as two horses can grind. These balls take from six to eight days in drying. The same mill grinds the balls to powder, which is placed on the floor of a room, to the depth of 3½ feet, and water thrown in at the windows every day for seven weeks; this seemed an irregular way of doing it, machines might be invented that would neither be drunk, nor careless.

less. When the fermentation is over, it is removed, packed into barrels or tubs, and is then merchantable. The price 20*l.* to 25*l.* per ton; one acre of land has produced (but mentioned as extraordinary) a ton and half, at thrice plucking the leaves. There are 120 acres of it on this farm; twelve men are kept in the house for the culture, besides many women hired for weeding. One hundred hands have been at work at once; and twenty-four horses employed; but these probably do the work of the farm. If 30*l.* or 35*l.* is a great crop; it requires very few figures to demonstrate that the old grass was a more profitable cultivation. It is a biennial plant."

SECT. XIII.—TURF.

So great is the value of turf, that land growing it has been sold at 50*l.* and 80*l.* per acre; and even at higher prices, and it appears that the land could not be applied to so lucrative an application.

Expenses.

Digging at different places, 2*s.* 6*d.* to 3*s.* 6*d.* per thousand.

Drying, ditto, from 1*s.* 3*d.* to 1*s.* 9*d.* per ditto.

Rent 1*s.* to 3*s.* 6*d.* per thousand of turf dug.

Getting from where grown to yards of retailers, stacking there, &c. &c. vary so much that no average price can be even guessed at. At Whittlesea these expenses are estimated at 5*s.* per thousand.

Produce. Turf is cut of various sizes, viz. three, four, four and a half inches square, and from eighteen inches to twenty inches long. At Islesham, two inches and a half square. and eighteen to twenty inches long. At Whittlesea, eleven inches long, and six and a half inches by five inches. Many (in different places), very ordinary and of no regular dimensions. From one to three turf deep are obtained, in some places the length is cut perpendicularly, in others horizontally. In many parts of the fen the cutting is repeated in about twenty or thirty years, as the turf pits are known to grow up. There are persons living at Islesham, who remember the same ground having been dug for turf three times; good turf land may be dug three or four feet deep. Produce of an acre of turf at Whittlesea, about 222,000; in many places 300,000. A complete acre will produce 392,000 turf, four inches square, and the length taken perpendicularly.

Prices.

At March, if good, 7*s.* to 9*s* per thousand.
At Ely, 6*s.*
At Cambridge, best Islesham turf, 8*s.*
At Whittlesea, 10*s.*

Turf lands often produce sedge after they have been dug for turf. One gentleman informed me he gave for a turf land 450*l.* that he sold the turf off it, and reaped a *nett* profit of 1400*l.* and has now the land which is worth 500*l.* This gentleman says coals are cheaper firing, than turf. I made inquiries on this subject at many places, and found that 5000 turf are supposed "to go as far" as forty bushels of coals in firing; hence, coals at 40*s.* per chaldron, (the present price of coals) and turf 8*s.* per thousand, are equal in value. Let us see what an acre of turf land will produce, calculating on the lowest of the above data.

1st, The lowest price. 2d, That only one turf deep be taken, and that four inches square, and the length cut horizontally. 3d, That *no* future produce be obtained. 4th. That the expenses be those of the present day,

Recapitulation.

	£.	s.	d.
Produce per acre; 392,000 turf, (viz. four inches square), and the length taken horizontally, and one turf deep only taken, say at 5*s.* per thousand	98	0	0
Expenses per acre. Digging, drying, and rent, together 4*s.* 6*d.* per thousand on 392,000	88	4	0
Profit per acre	9	16	0

Now calculate upon the prices above 5*s.* per thousand, that two, and sometimes three turf deep are taken, that the cutting is repeated, that sedge is also obtained, and a profit will appear, accounting for the high price of turf land.

SECT. XIII.—SEDGE.

LANDS appropriated to this purpose vary so in their value, that no average worth per annum can be with accuracy stated; some idea, however, on this subject may perhaps be formed from the following account of their produce, and the attendant expenses.

Produce. From five to fifteen hundred per acre. Price 7*s.* per hundred, and it is advancing. Cut about every five years. At Chippenham, 4*l.* per acre have been made of sedge. At Cambridge, retail price, for best burning sedge, 12*s*. for thatching 14*s*. per hundred. At Whittlesea, 21*s*. per *thousand*.

Recapitulation.

	£.	*s*.	*d*.
Produce—Say every five years, ten hundred at 7*s*.	3	10	0
Expenses ditto ditto cutting at 1*s*. 6*d*.	0	15	0
Profit	2	15	0

2*l*. 15*s*. for five years, is 11*s*. per year per acre. From this 11*s*. are to be deducted rent, rates, and getting crop together for delivery. These expenses vary so much, I could get no average of them. The value of sedge is so increasing, owing to the rise in the price of straw and seed, and the improving state of the fens, (which decreases this crop). that it is the general opinion that land producing it, will not yield so great profit from any other application, after improvement.

SECT. XIV.—REED.

NOTHING pays the occupier equal to this crop. Its cultivation, however, is rapidly decreasing, owing to the improvement of the fens.

Expenses. Cutting 4*s*. to 4*s*. 6*d*. per 100 bunches (six score).

Produce. Per acre 200 to 500 bunches (twenty-eight inch bands) worth 6*l*. to 8*l*. per 1000 bunches. At Whittlesea, 14*s*. per 100, viz. 7*l*. per 1000 laid in. At March, seven guineas per 1000; bands formerly an ell, now twenty-eight inches. At Downham (adjoining Cambridgeshire), seven guineas per 1000, a few years ago, only 2*l.* At Ely, seven guineas per 1000.

Produce per acre (taking price at 6*l.* per 1000.)

	£.	*s.*	*d.*
Three and a half hundred at 12*s.*	2	2	0
Expenses on ditto, at 4*s.* 3*d.* per 100, cutting	0	14	10½
Profit	1	17	1½

Here are 1*l.* 17*s.* 1½*d.* per acre to pay rent, rates, &c. &c. shewing that at seven guineas and the advancing prices the profit is handsome. Ice and wind are the great enemies of this crop.

SECT. XV.—WHITE-SEED.

WHITE-SEED is the produce of ordinary fen land, and frequently of such as has been dug for turf; it is produced in many parts of the fen at Waterbeach, and Cottenham, &c. &c. A great deal of it grows in the Wash.* White seed may be called fen hay, and is esteemed as valuable as any hay for cows, causing them to produce much milk. It is mown twice, and two tons are frequently produced each time. Mr. Young (in his notes taken at Cottenham) calls this produce a reed. It appears more like sedge. The soil that grows it, is "a black turf or moor, two to three feet deep." (Annals, v. 4, p. 143, 4, p. 143). The land is purposely inundated till the crop appears above the water, then (where it can be effected) the water is let off.

SECT. XVI.—OZIERS.

OZIERS are grown in the Wash, as well as in many parts of the fen, and their culture appears a most profitable application of land, paying far beyond any other to which the greatest improvement could make it suitable. Land which has been dug for turf is sometimes applied to this crop.

Culture. Put sets in April, twenty to twenty-four inches asunder; eighteen inches into ground, the same out, 8 to 10,000 sets wanted to plant an acre; cost of sets 10*s.* per thousand. Cut sets from holts, viz. stubs of two years growth. Want renewing yearly to amount of about 1000 sets per acre. They are cut in March and May, those cut in the former month are dyked till May, to make them peel, those cut in May will peel without dyking. Both cuttings are sold together, and at the same price. Are cut the second year after planting, then every year. Ice and wind destructive to them.

Produce. A load to two and a half loads per acre. A load is eighty bunches, price 18*l.* to 20*l.* per load. The produce from holts under four years old, of little value. The bands of the bunches are forty five inches long in general; at Mepal only forty inches. Produce at Mepal one load, at Sutton same, and price 17*l.* to 20*l.*

Expenses per acre. Planting 10,000 sets, two feet each way, done by day. Weeding 12*s.* to 14*s.*, cutting and tying 1*d.* to 2*d.* per bunch. Putting into pit, done by day. Peeling 4*d.*, per bunch. Binding, 1½*d.* per bunch. Rent, 2, 3, to 4*l.* Freight and expenses to London 4*l.* per load, paid generally (and under all the prices I have stated) by the purchaser. To these expenses are to be added hire of premises (a barn usually) and other incidental charges, which vary so much that it is not easy to state an average of them: but as the whole expenses per acre (on an average of fen situations) are estimated at 10*l.* I have in the following annual account of the outgoings per acre, added incidentals to make it up that sum.

Annual expenses per acre from above datum, assuming as an average crop, one load and a half viz. 120 bunches.

	£.	*s.*	*d.*
1000 sets, renewed annually	0	10	0
Cutting and tying, 120 bunches, at 1½*d.*	0	15	0
Peeling 120 bunches, at 4*d.*	2	0	0
Weeding	0	13	0
Binding after peeling 120 bunches, at 1½*d.*	0	15	0
Incidentals—Rent, and rates, planting the 1000 sets renewed annually, putting into pit, hire of barn, boating, (in many situations), carting, &c. &c.	5	0	7
	10	0	0
Produce one and a half loads at 17*l.* per load, (the lowest price which I heard)	25	10	0
Profit	15	10	0

Oziers have risen to their present price only a few years,

years; formerly they were at 7*l.* to 10*l.* per load. It should also be remembered that great losses are sustained by wind and ice; the crop being often totally destroyed by them. Mr. Bull, of Ely, has been a successful, spirited, and judicious cultivator of oziers; his method may be seen in the following letter addressed by him to the secretary of "the Society for the Encouragement of Arts, Manufactures, and Commerce," claiming their premium for planting oziers.

"Sir,

On reading over the list of premiums offered by the Society for the Encouragement of Arts, &c. for the year 1801, I beg leave to claim the premium for planting oziers. It may not be unnecessary to premise, that in the year 1801, I purchased a piece of waste land that lies contiguous to the river Ouse, and is liable to be inundated by every flood. I mention this circumstance, because the value of such land is very little indeed for any other purpose than planting, and on account of its situation for moisture, and the accumulation of fresh soil by the winter floods, is the most proper for that purpose. This land, which was more than eight acres, and was dry during the summer of that year, which was very favourable, I prepared by throwing it up into bars or beds, each being about a pole in width, and raised them more than a foot higher than the natural soil, for the reception of the sets or plants in the spring of 1801; and in the months of March and April last, I planted each of them at the distance of exactly twenty-one inches, that is 14,223 per acre. The season was fine for the purpose, and I have the satisfaction to add, that they have grown beyond my most sanguine expectation, the greater part being more than nine feet in height, and proportionably thick. I have spared neither expense nor care to keep them perfectly free from weeds, and well fenced; and almost all of them will be in the spring fit to cut for the basket-makers' use, which is, I believe, an unexampled precedent for so large a quantity. The sorts consist of French, New kind, West-country, Spaniards, and a few Welsh, and oziers all of the best quality."

I am, Sir,
Your most obedient Servant,
Seth Bull."

Two certificates, viz. one from Thomas Page, Esq. of Ely, and the other from the Rev. Charles Mules, and Mr Lutt, jun. accompanied this letter, and confirmed Mr. Bull's statement. Mr. Bull's present ground (1805) is flourishing; it is cut into beds of twelve feet wide, between every one of which is a ditch nine feet wide, the earth out of which raises the beds so high as to secure them from inundation.

CHAP. VII.

GRASS.

THIS county contains a great quantity of grass lands. Some under no management, and of so little value in their present state that the town charges of many parishes in which they are, would be a high rent for them; indeed from their appearance one would conclude they are not deemed by the farmer worthy his attention; there are, however, many thousand acres of pasture of the first quality, and under the best management. Mr. Vancouver speaks of the quality of the pastures of the county, thus: "the principal division of the pasture grounds which are noticed, are first, those which produce a rich tender grass and herbage, from a loose black soil proper for feeding or grazing cattle, and worth from 25*s.* to 30*s.* per acre. The second a more coarse but luxuriant grass and herbage, produced upon a close moist soil proper for the depasturage of milch cows and store cattle, worth from 15*s.* to 20*s.* per acre. The third class produces very coarse, short, sour grass and herbage, vegetating very late in spring, from wet, cold, and compact clays, worth from 5*s.* to 10*s.* per acre; this last division owes its inferiority to the wet, cold, and compressed state in which it has lain for ages."

I. *Inferior pastures.*

These are dispersed chiefly over the upland part of the county, on heavy, wet soils; they are miserably poor, and abounding with every thing but what they ought, yet capable of vast improvement, with the prospect of paying amply. Opinions vary on the mode of improving them, many (the majority) being for paring and burning, keeping them in tillage a few years, and returning them to pasture again. Others are for improving them without breaking up, viz. by clearing them of bushes, ant-hills, &c. &c. draining, mucking, and by occasional mowing. Others instead of occasional mowing, are for constantly feeding them by sheep. Mr. Sawyer, of Cheveley, is against breaking them up, as is Mr. Sanxter, of Horse-heath; the latter gentleman has an idea that he can effect every improvement of which his pastures (as miserable ones as need be) are capable, without fire, or plough, he shewed me a piece on which he means to make his trial, and which if he alters at all it must be for the better. Mr. S. will state his process to the Board, through which the public will no doubt be put in possession of it, if it be thought worthy of imitation. Mr. Vancouver observes, "these pastures are to be relieved only by hollow draining, breaking up with the plough, and exposing the soil to the meliorating influence of all those external powers, the benign effects of which long experience has clearly proved to communicate fertility. By previously hollow draining and breaking up with the plough, in two or three years every remnant of the former surface of this class, together with the roots of all the weeds and beggary it produced, will be completely putrified. The soil thus opened, becomes pulverized, mellow, open, free and ready for the reception of the following grass seeds, proper for permanent pasture.

Six pounds of perennial red clover, called cow grass (trifolium alphistre); four lbs. of Dutch white clover, called honey-suckle, (trifolium repens), three lbs. of narrow leafed plantain, or rib-wort; four lbs. of yellow trefoil, called black nonsuch; three lbs. of burnet, and one bushel of rye-grass per acre. In place of the latter article, two bushels of clean light hay seeds, which when properly sifted, and well cleaned, ought to weigh twenty pounds to the bushel, or four gallons of timothy (cat's tail) and four gallons of fescue (dog's tail) may be recommended in preference to the rye-grass. The crops, which should not exceed three, and which may be taken from the old pasture, before it is again laid down, will amply repay every expense that may arise in the hollow draining, stubbing, levelling the ant hills, and purchase of grass-seeds; when this description of land will be thus improved from 5*s.* or 7*s.* 6*d.* to 15*s.* or 20*s.* per acre. Mr. V. is an enemy to paring and burning these lands; his reasons may be seen in the chapter on that subject.

These pastures afford a miserable support to various kinds of lean stock.

II. Superior pastures.

The greater part of these is situated in the parishes of Soham, Ely, Chatteris, March, Wisbech, Outwell, Upwell, Thorney, Whittlesea, and other parishes in and bordering upon the fens. The district called the "Wash," is also most valuable pasture; it is the receptacle of the upland waters, it is called in the map the "100 foot Wash," running by the side of the old Bedford river, being nearly twenty miles long, and from one-fourth of a mile to three miles wide. This land has been sold at 10*l.* per acre, for growing oziers, but it is chiefly applied to feeding; some mow it, running the hazards of floods. Its quality is such that in six weeks it will fatten a bullock or horse, though put unto it bone lean; it rots sheep. Its fertility is attributed to the earth of the upland arable lands, brought and deposited at every flood. Formerly the growth of oziers was prohibited in this spot, it being then thought prejudicial to drainage, preventing the waters getting off so soon as they otherwise would; now, that the waters are thought to get off too soon, the growth of oziers is encouraged here.

Culture. Frequent mucking, by some with muck only, by others, with muck and manure.

Application. First, grazing bullocks and sheep.

2nd, Breeding and rearing neat stock, sheep, and horses.

3rd, Dairying.

4th, Mowing.

Stock per acre. Bullock, half, one, one and a half to two per acre.

Sheep. five to twelve. Growing neat cattle, horses and colts in proportion.

Management. The sheep pastures are fed all the year, reducing the number in March, for a week or two, to about half the summer-stock. Bullock-pastures are spared about a month or five weeks in the spring. Mr. Jennyns, of Bottisham, sows on his pastures, where they fail of plants, ray-grass in autumn; and folds after it directly. About Madinglay the pastures abound with mole-casts, and not a mole catcher near; the hills are cut level with the surface, the mould spread, and the flag returned to its place.

Mowing. No greater breadth of pasture is mown, (where stock is kept) than is wanted for winter food. All the improvement on stock is in fact from the pastures, as the winter keep, (excepting a few instances of corn grazing) is hay; one, one and a half, two, and two and a half tons of which are mown per acre. Nothing singular in the making process, except that the grass is gotten together for cocking by a horse and rope. Mowing and making in fen from 6*s.* to 8*s.* per acre. The rich pastures, called grazing grounds, are never mown. Mr. Edes, of

Wisbech, mows his grazing grounds when they become full of thistles, then mucks them. About Babraham, where the meadows are highly rented, they are much neglected, owing to an idea that they require no mending, though mown yearly; but it is notorious that they need mucking, though regularly flooded; much more then do they require it, when they have not the benefit of the latter operation.

The returns from the various applications of these pastures vary considerably, from an almost incredible profit, to great loss, owing to the great fluctuations of London markets, to which most of the stock and firkin butter go. Some idea, however, may be formed of the value of Cambridgeshire fen pastures by the following account of a lordship in the county.

Human food from grass land.
A lordship in Cambridgeshire.

	Profit.	Increase.
	£.	Pounds.
3000 acres, say 1000 beasts cost 14*l.* each, weight in, thirty stones; out, fifty-six stones; increase twenty-six stones sold for 21*l.*	7,000	364,000
3000 sheep; weight in, 16lb. per quarter; out, 20 lbs. increase 16 stone.	1,200	48,000
Wool of ditto, at 3½ to a tod, say 856 tods, at 21*s.* or 9*d.* per lb.	900	
Average profit 3*l.* 0*s.* 8*d.* per acre.		
Animal food 137 lbs. per acre.		
7000 acres to keep 24,500 sheep in summer.		
In winter 5,000		
29,500		
Carried forward	9,100	412,000

Brought

	Profit.	Increase.
	£.	Pounds.
Brought forward, 29,500 sheep	9,100	412,000
of which 20,000 shearlings will increase 20 lbs. each	10,000	400,000
4500 lambs hogs, 12 lbs. each	1,350	54,000
5000 winter stock, 6 lbs. each.	750	30,000
20,905		
200 store beasts, increase 10 stone each	700	28,000
And the 24,500 summer stock will clip 3½ to a tod, or 7000 tods of wool, at 21*s.*	7,350	
	29,250	924,000

10,000 acres, average 2*l.* 18*s.* 6*d.* per acre.

Average of animal food, 92 lbs. per acre.

Average rent of said 10,000 acres, 18*s.* 6*d.* per acre, viz.

Of the 3000 acres, 1*l.* 2*s.* }
Of the 7000 ditto, 17*s.* } 18*s.* 6*d.* an acre rent;

producing 92 lbs. of food, is in the proportion of five lbs. of meat for every shilling rent." A. Y. Annals, v. 38. p. 3.

The perfection of grazing is reckoned to consist not only in the choice of stock, but in nicely proportioning it to the breadth of land; being under-stocked is considered a great evil, as long grass is found prejudicial to any cattle. On grazing, the farmers of this county with reason pride themselves.

Many of the pastures will not fat stock, but they pay well by rearing it.

Lying

Laying down to grass. Nothing singular on this head. A few years hence will probably afford some useful information on it, as many of the new enclosures will doubtless be applied to grass, instead of the plough. Lord Hardwicke intends laying down to permanent pasture with ray-grass, and Dutch clover only. Breaking up old pastures, has been done by the majority by paring and burning, though many individuals, as I have remarked, are against it. When not burnt, beans or oats are the first crop.

The following list of grasses natural to the county, was given me at the Botanical garden, Cambridge.

N.B. Those marked thus* are most esteemed for pasture.

		Called.
Anthoxanthum	odoratum,	sweet-scented vernal grass.
Alophecurus	pratensis,*	meadow-fox tail grass.
	agrestis,	mouse-tail grass.
	geniculatus	
Agrostis	spica venti	
	canina	
	vulgaris	
	stolonifera,	creeping bent grass.
	alba	
Aina	cristata	
	aquatica	
	cœspitosa	
	flexuosa	
	præcox	
	caryophyllea	
Avena	fatua,	wild, or bearded oat.
	pubescens	
	pratensis	
	flavescens,	yellow oat grass.
Arundo	phragmites	

Arundo

		Called.
Arundo	epiggos	
	calamagrostis	
	colorata	
Briza	media,	middle quaking grass.
Bromus	seculinus	
	multiflorus	
	mollis,	broom grass, soft.
	arvensis	
	erectus	
	asper,	broom grass, rough.
	sterilis,	broom grass, barren.
	sylvaticus	
	pinnatus	
Cynosurus	cristatus,*	dog's tail grass, crested.
Carex	divica	
	pulicaris	
	stellulata	
	curta	
	ovalis	
	remota	
	axillaris	
	intermedia	
	muricata	
	divulsa	
	culpina	
	teretiuscula	
	paniculata	
	pendula	
	strigosa	
	præcox	
	flava	
	extensa	
	distans	
	panicea	

Carcex

		Called.
Carex	sylvatica	
	recur	
	palbesceus	
	pseudocyperus	
	pilulifera	
	cæspitosa	
	stricta	
	riparia	
	paludosa	
	acuta	
	iesicaria	
	ampullacea	
Dactylis	glomerata,	cock's foot grass, rough.
Eriophorum	angustifolium	
Festuca	ovina,	fescue, sheep's.*
	duriuscula	
	myurus	
	giganteus	
	coliacea	
	pratensis,*	fescue, meadow.
	elatior*	
Holcus	canatus	soft grass, meadow
	avenaceus,*	
	mollis,	soft grass, creeping.
Hordeum	murinum,	barley-grass, wall.
	pratense,	rye-grass.
	maritinum,	marsh barley-grass.
Lolium	perenne,*	perennial darnel.
	temulentum,	annual darnel.
	arvense	
Luncus	glaucus	
	conglomeratus	
	effusus	
	squarrosus	

		Called
Luncus	squarrosus	
	articulatus	
	uliginosus	
	bulbosus	
	buffonius	
	pilosus	
	campestris	
Milium	effusum	
Milica	uniflora,	single-flowered wood.
	cœrulea	
Nardus	stricta,	mat grass, or mat weed.
Phalaris	arenaria	
	phlœides	
Panicum	i iride	
Phleum	pratense*,	cat's tail grass, meadow.
	paniculatum	
Poa	aquatica	
	fluitans	
	distans	
	maritima	
	rigida	
	compressa	
	trivialis	
	pratensis*	
	annua,	annual-meadow-grass.
	memoralis	
	decumbens	
Rotboella	incurvata	
Schoenus	maricus	
	nigricans	
	conipressus	
	allus	
Scirpus	palustris	

		Called.
Scirpus	cœspitosus	
	aciculare	
	lacustris	
	setaceus	
	maritinnus	
Tricum	repens,	couch-grass.
	caninum	
	loliacum	

CHAP.

CHAP. IX.

GARDENS AND ORCHARDS.

Gardens.

AT Ely, Soham, Wisbech, &c. are many large gardens, producing so abundantly of vegetables and common kinds of fruit, as to supply not only the neighbouring towns but counties, the produce being sent to a great distance, to Lynn, &c. &c. by water, and by land, affording employ for many hands, labourers, retailers, carriers, &c. &c.

Rent, Expenses, Produce, and Profit.—The tenants of these occupations are not of that description of men, who are either able or willing to give correct information on these points; I learnt, however, from other quarters, that the rents were from 3l. to 7l. per acre. The occupiers labour hard themselves, and every part of their families, and at all hours, doing in a day, what would be called amongst labourers, a day and a half's work, and hire much help too; the profit notwithstanding must be great, as a garden of two or three acres affords a decent maintenance for a family. Mr. Middleton, in his Report of Middlesex, has communicated much valuable and interesting information on this head; shewing the immense value of the produce of lands thus applied; but it is not to be expected that the gardeners of Cambridgeshire should be so communicative as those Mr. M.

met with, who were doubtless men of education and independence; regardless of their individual interest.

Orchards.

These are numerous and large in the same districts as the gardens; the chief growth, apples and cherries; Soham is remarkable for the latter.

Rent, Expenses, Produce, and Profit. On these the same observations are applicable as made on gardens; the rents excepted, which are double at least.

CHAP. X.

WOODS AND PLANTATIONS.

WOODS are not extensive in this county. Many plantations have been made where enclosures have taken place; they have not only considerably improved the face of the country, but promise to prove a source of profit, exceeding, it is thought, on poor light soils, any other application to which such lands are suitable. The Rev. G. Jennyns, of Bottisham, has planted with great success, as has —— Tharpe, Esq. of Chippenham. Mr. Jennyns has planted, on clays, oak and spruce-fir.

on white lands, beech and birch.
on gravel, larch.
on light land, Scotch fir.
on fen, spruce fir.

In planting oaks, Mr. Jennyns does not cut off the straggling roots in the usual way, but digs sufficient space to receive them, and has found, that thus managed, they thrive considerably faster. Mr. Pemberton, of Trumpington, has planted a broken moor at about 10*l.* per acre; the contractor, (Mr. Mackie, of Norwich) engaging to leave all alive at the end of three years.

The woods are felled at twelve or thirteen years growth, the produce made into hurdles, splints, spits, &c. &c. Labour, making hurdles per dozen, 20*d.*; splints, per hundred, 6*d.*; spits, per thousand, 6*d.*; produce, per acre, worth about 18*l.* at thirteen years growth (exclusive of timber) *i. e.* per year 1*l.* 7s. 8¼*d.* Mr. Vancouver states woods as paying 15*s.* per acre. In Stetchworth he says there are about 335 acres of wood (oak); the undergrowth of which, consisting of hazel, ash, black and white thorn, sallows and maple, is filled every twelve years, and produces from 8*l.* to 10*l.* per acre."

Observation. I was told, as I have stated, which difference may in part be accounted for from the great advance in prices; many of the homestalls in the fens are surrounded by handsome and thriving plantations of larch, firs, beech, oak, birch, black alder, poplar, ash and willow.

Mr. Tharpe, of Chippenham, has remarkably thriving plantations on very poor fen, a direct bog. Dr. Harwood, of Bartlow, has in his plantations a striking profit, that trenching previous to planting, repays the expense; the difference where he has followed this method, and where he has not, is remarkable.

Annual profit. This is supposed equal to that which would arise from any other application of the land, at a fair rent, the profit on the timber excluded. Ozier plantations are noted under the section *Crops not commonly cultivated.*

CHAP.

CHAP. XI.

SECT. I.—WASTES.

Mr. A. Young, in his account of "Waste Lands by Estimation in Great Britain," (published 1795) states those of this county at 185,300 acres. Mr. Vancouver, in 1794, calls them 158,500 acres, under the following heads.

	Acres.
Waste and unimproved fen	141,000
Half-yearly meadow	1,500
Highland-common	5,500
Fen or moor common	6,000
Heath, sheep-walk	4,000
Total	158,500

I found great doubts entertained in the county of the accuracy of Mr. V.'s report on this subject; various opinions exist on it. The fact is, no dependance can be placed on any communication on this head; very few persons are in possession of sufficient information on which to form a correct opinion; every one will, however, allow that the quantity is sufficient to merit the attention not only of individuals but of the legislature. Greater inducements cannot in reason be desired, or safer grounds on which to act, expected, than the result of experience from what *has been done* in fen and upland, in this county. Compare the value of the former improved, with that inundated or in danger of it, and the latter enclosed with that open, and pasture neglected with those improved. Mr. Vancouver is very full and correct in his descriptions of these waste lands; he writes. "Upon this subject, the want of opportunity to revisit the great level of the fens, and the parishes bordering upon them, is a circumstance much to be lamented, as the quantity of fen-land, that is in an improved and profitable state, and that which is drowned and of little value, would thereby have been more correctly ascertained. Reference however may be had to Chatteris, Elm, Leverington, Parson-Drove, Wisbech, St. Mary, and Thorney, for a comparative view of what the lost country of the fens is capable of in point of improvement by recovering the natural outfall of the middle and south level waters. The fenny land in the above parishes under improved cultivation amounts to about 50,000 acres, and yields a produce far beyond the richest highlands in the county, averaging a rent of more than 15*s.* per acre. Whereas the waste, the drowned and partially improved fens, amounting on a moderate computation to 150,000 acres, cannot be fairly averaged at more than 4*s.* per acre. Hence in this county only, an increased rent of 10*s.* per acre, amounting to 75,000*l.* annually, may be reasonably expected from a complete and effectual drainage of the fens; and restoring to the country a tract of far more beautiful and productive land than is to be met with of the like extent, in any part of the island."

"Fen or moor common. In the highland part of the county, there are about 8,500 acres of this description, which at present contribute little to the support of the stock, though greatly to the disease of the rot in the sheep and cows. These commons generally lie well for draining, and are otherwise capable of very great improvement; but until a court of sewers shall be established with powers to oblige the mills upon the several streams which pass through these moors, to be pitched lower, so that the mill dams shall not hold the water up to its present height, and over-ride the surface of the commons as they now do; no remedy can be applied to this very serious evil, which must necessarily be removed before any improvement can be undertaken."

"Half-yearly meadow land. There are about 2000 acres of these lands lying dispersed through the hollows of the open-fields, and receiving the richest juices of the surrounding lands; even in their present neglected state, they are rented on an average at 12*s.* 6*d.* per acre only, but would by proper draining, and being put in severalty readily be improved to 30*s.* per acre, as the crop which is now only mown twice in three years, would then be annually secured."

"Highland common. There are about 7,500 acres of this land in the county, which in severalty would be readily improved to the annual rent of 21*s.* per acre. In its present state it cannot possibly be valued at more than half that sum; though no alteration in the present mode of depasturing, can apparently be made to encrease the present estimated value.

"Heath sheep walk. Of which there are about 6000 acres." This land appears to be chiefly appropriated to the original design of nature, the surface or skin forming a tender and wholesome food for the sheep which are generally depastured thereon. The staple of the land is in general so very dry and thin, that once broken it will be ages before it can acquire an equally valuable turf or covering with that it now produces. The substratum is generally a chalk, though in some places there is found a deep rank sand, abounding with flints, and where the surface is broken, the sand in the dry season of summer is very liable to be driven by the wind, to the inconvenience not only of the adjoining lands, but of those at some distance. Were these plains in severalty, and were it practicable to raise live fences upon them, trefoil, cinquefoil, and rye-grass would be found the most profitable grasses to cultivate. The less however, that this kind of land is disturbed, the better." On these lands the Rev. T. Hall, of Bartlow, observes, ten Co. per acre of oais, and twelve Co. of barley were produced from land formerly heath, this season (1805): "A sufficient proof of the advantage that would result from the proper management of this species of soil now let for 3s. per acre, as sheep walk."

Many of the sheep walks (in the neighbourhood of Newmarket in particular), have been converted in consequence of enclosure, to arable, by first paring and burning; and the success has been great. There are, however, those who think with Mr. Vancouver, and pronounce this only a temporary benefit, and that should it be intended to return these lands to sheep-pasture again they will never be so valuable for that purpose. Such indeed may be the case from injudicious and unmerciful cropping succeeding it, but it is not easy to conceive it will under proper management; what that should be (if success may be taken as a safe criterion) may be seen by the method which has been adopted of cropping these lands.

CHAP.

CHAP. XII.

IMPROVEMENTS.

THE fens of this county form so prominent a feature of all that concerns improvement, and the particular operations going forward in them embrace so many of the heads stated by the Board under this chapter, that I consider it will be the best arrangement of the subject, here to introduce the state and capability of the

Fens;

A district meriting the particular attention of its owners and occupiers, even if their views be confined solely to their individual interest. Lord Hardwicke in his pamphlet on the Eau-brink business, well observes on this tract of land: "It is an object of great importance in a national view to bring into a state of more certain cultivation, a considerable tract of country, the produce of which is comparatively small, and to render fruitful other districts that now produce neither corn nor herbage, and are incapable of any cultivation at all. So great indeed is the importance of increasing the products of the country at large, that if grants of public money were ever made for local purposes, there is no object that could form a more proper ground for an application to parliament." Great as have been the returns made on sands, by the clay cart and on clays by the draining spade, much greater may be reasonably expected from judicious and spirited exertions on this tract, if experience be allowed a fair criterion from which to augur future improvements, or, as

Lord Hardwicke observes in his pamphlet I have alluded to, "unless one can suppose a number of professional men, either to be deceived themselves, or to deceive the public wilfully, and without a motive." The instances given me of the improved value of fen by cultivation and drainage, would be incredible, were not the authority most respectable. The accounts I had of money saved by buying, improving, and selling, are equally astonishing; it must not, however, be concealed, that numerous as are the instances of vast fortunes accumulated in the fens, many speculators there have met utter ruin: this indeed has chiefly befallen persons wanting skill or capital, or has arisen from accidents not now to be apprehended under a proper system of drainage.

It was the opinion of Mr. Atkins (a commissioner of sewers in the reign of James I. 1604, &c. &c.) that these fens were once "of the nature of land-meadows, fruitful, healthful, and very gainful to the inhabitants, and yielded much relief to the highland countries in time of great drought." Sir W. Dugdale (who was born 1605, and died 1686) was of the same opinion, adding as a proof, "that great numbers of timber trees, (oaks, firs, &c. &c). formerly grew there, as is plain from many being found in digging canals and drains, some of them severed from their roots, the roots standing as they grew in firm earth below the moor. The firs at the depth of four and five feet. The oaks at three feet; they were lying in a north west direction not cut down, but burnt near the ground, as the ends of them being coaled, manifested. The oaks in multitudes of an extraordinary size, being five yards in compass, and sixteen yards long, and some smaller of a great length, with a quantity of acorns near them." In marsh-land he says, "about a mile westward of Magdalen bridge, at setting down a sluice, there were discovered at seventeen feet deep, several furze and nut-trees pressed flat down, with nuts sound and firm lying by them, the bushes and trees standing in the solid earth below the silt." The Rev. J. Rasbrick, of King's Lynn, (see Philosophical Transactions, No. 279.1702), and Mr. Elster, (see Historical account of Bedford level), gives the like testimony respecting the former existence of trees in the fens, the latter remarking that those he saw, appeared to be sawed off. To this day (1806) are found in every part of the fens, many at so short a distance from the surface, that the plough frequently touches them; I witnessed this many times. Mr. A. Young (Annals, v. 37, p. 451), says "in every part of Europe, where marshy fens and bogs are found, if the soil be peat, trees are commonly discovered at various depths. It is the same in the lordship of Thorney (in this county); in the upland parts all sorts of trees, and in the lower fen-lands they are all firs; and it is a fact, that Mr. Wing (of Thorney) has often ascertained, that many have been met with sawn off, and lying as they fell by the stump. "The horns of red deer have been dug up, and are preserved at the abbey." The commissioners under a law of sewers made 1596, and called "neat moor law," speaking of the fens, say, "which in former times have been dry and profitable, and so they may be hereafter, if due provision be made."

Sir H. Hobert, (Attorney-general to James I.) says, "the grounds now sought to be drained (1604, &c.) are such as naturally and anciently were dry grounds." Dugdale mentions a gravel causeway three feet deep, (supposed to be made by the Emperor Severus, who was born 146, and died 211), from Denvor in Norfolk, to Peterborough in Northamptonshire, twenty-four miles, and which is now covered with moor five feet in thickness. In deepening the channel of Wisbech river, 1635, the workmen at eight feet below the then bottom, discovered a second bottom which was stony with seven boats lying in it, covered with silt. And at Whittlesea, on digging through the moor at eight feet deep, a perfect soil was found with swaths of grass lying on it, as they were at first mown. Henry of Huntingdon, (who lived in the reign of Stephen, 1135) described this fenny country "as pleasant and agreeable to the eye; watered by many rivers which run through it, diversified by many large and small lakes, and adorned by many woods and islands." And William of Malmsbury, who lived in the first year of Henry II. (1154) has painted the state of the land round Thorney in the most glowing colours, he says, "it is a very paradise, in pleasure and delight, it resembles heaven itself, the very marshes abounding in trees whose length without knots do emulate the stars." "The plain there is as level as the sea, which with the flourishing of the grass, allureth the eye;" "in some parts there are apple trees, in others vines." It appears then on the authority of the authors quoted, that the fens were formerly wood and pasture. The engineers were of opinion that the country in question formerly meadow and wood, now fen, became so from partial embankment, preventing the waters from the uplands going to the sea, by their natural outfall; want of proper and sufficient drains to convey those waters into the Ouse; neglect of such drains as were made for that purpose; and that these evils increased from the not embanking the river Ouse, and the erection of sluices across it, preventing the flux and reflux of the sea; and the not widening and deepening where wanted the river Ouse, and from not removing the gravels, weeds, &c. &c. which from time to time accumulated in it. The first attempt at draining any part of the fens (Dugdale) appears to have been made in the time of Edward I. (1272, &c.)

&c.) many others with various success followed. The famous John of Gaunt, (or Ghent who died in 1393), and Margaret, Countess of Richmond, were amongst the draining adventurers; but Mr. Gough in his addition to Camden, says "the Reign of Elizabeth (1558) may be properly fixed on as the period when the level began to become immediately a public care." Many plans were proposed and abandoned between that time and 1634, when King Charles I. granted a charter of incorporation to Francis, earl of Bedford, and thirteen gentleman adventurers with him, who jointly undertook to drain the level on condition that they should have granted to them, as a recompense 95,000 acres (about one-third of level). In 1649, this charter was confirmed to William, earl of Bedford, and his associates, by the convention parliament, and in 1653 the level being declared completely drained, the 95,000 acres were conveyed to the adventurers, who had expended 400,000*l.* which is about 4*l.* 4*s.* per acre, on the 95,000 acres, and about 1*l.* 8*s.* on the whole breadth, if the whole level contain 285,000 acres; (it is generally supposed to contains 300,000 acres). In 1664, the corporation called "conservators of the great level of the fens," was established. This body was empowered to levy taxes on the 95,000 acres, to defray whatever expenses might arise in their preservation, but only 83,000 acres were vested in the corporation in trust for the earl of Bedford and his associates, the remaining 12,000 were allotted, 10,000 to the king, and 2000 to the Earl of Portland. At first the levy was an equal acre tax, but upon its being deemed unjust, a gradual one was adopted, which is now acted upon. In the year 1697, the Bedford level was divided into three districts, north, middle, and south; having one surveyor for each of the former, and two for the latter. In 1753, the north level was separated by act of parliament from the rest.*" In addition to the public acts obtained for draining the fens, several private ones have been granted for draining separate districts with their limits, notwithstanding which and the vast sums expended, much remains to be done; a great part of the fens is now (1806) in danger of inundation, this calamity has visited them many times, producing effects distressing and extensive beyond exception, indeed many hundred acres of valuable land, are now drowned, the misfortune aggravated by the proprietors being obliged to continue to pay a heavy tax, notwithstanding the loss of their land. Mr. A. Young describes the state of the fens when he visited them,† thus: "I found a very great portion of them in so dreary a state, that *waste* was the only appropriate term to be given, and the whole appeared to be in such manifest danger of inundation, that I could not but agree in the propriety of being particular in the examination I took of this interesting country. The last great breach of banks which inundated the north level, and laid the whole seven or eight feet under water, happened in 1770; it was 130 yards long, and 36 feet deep. In 1795, all the other banks gave way, and flooded.

	Acres.
By slips in the banks	83,500
By downfall	57,000
Total	140,500

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* "Beauties of England and Wales," by Briton and Brayley a work much esteemed in Cambridgeshire. Colonel Armstrong's History, &c. &c. of the Fens.

† Mr. Young published the following in 1805. The communication is without date.

N.B. Calculated at the meeting at Ely, 27th February, 1795.

Much about the same quantity flooded in 1799 and 1800, by downfall and breaches in the interior banks. "For the last thirty years many inundations have taken place, and lately with increasing power and immense mischief. The remedies that have been applied by numberless acts of parliament, obtained with merely local and distinct views, have been vain and nugatory, but the burden by taxes immense. In 1749, over a great district 1*s*. 6*d*. an acre was laid on; in 1772, 3*s*. added, and in 1798 above 150,000 paid 5*s*. an acre, upon inundated lands. In 1799 above 25,000 acres were under water till May 1800, and all much annoyed by the flood; and it was a melancholy examination I took of the country between Whittlesea and March, the middle of July, in all which tract of ten miles, usually under great crops of cole, oats and wheat, there was nothing to be seen but desolation, with here and there a crop of oats or barley, sown so late that they can come to nothing; a great loss by seeding the land at so high a price. Some crops on rather higher spots looked well; but very late. Of wheat there is not an acre; the grass itself is very much damaged, produces where mown, miserable crops of sedge, instead of good grasses; and where fed, keeping very little stock, and that badly. Yet the average rent of these ten miles is 14*s*. per acre, and the landlord has a drainage tax to pay of 5*s*. per acre, and in some districts 7*s*. In Ramsey Fen, I examined more melancholy instances of the want of a better drainage, and more speedy conveyance of the water to sea. Middlemoor in that parish, is a tract of 2,500 acres, which remained for more than twenty years a watery desert. "Towards Ramsey New enclosed Common and Whittlesea Moor, a spectacle still more mortifying is to be seen to the left, on the other side of the river or *load;* now a tract of water, sedge, and frogs, which Mr. Pooley remembers thirty-six years ago in a state of cultivation, and producing ample crops over hundreds of acres. It joins another similar tract called Holm Fen, all under water; that twenty years ago, had buildings, farmers, and cultivation; on part of it, near Whittlesea Moor, fine crops of wheat were grown, only three years ago. One man had five quarters of wheat two years running per acre, on this land, now all waste and water. Another twenty-eight Co. of oats per acre, followed by a second crop of a last. Another had as good a dairy of cows as any in Huntingdonshire, the land is excellent and would graze a large ox." "I was shocked at the sight of this desolation. A people starving, and 1500 acres of fertile land left in such a condition, in such a kingdom, is a spectacle that ought to be instructive to politicians. We are told of the national wealth; here is a field for the exercise of it. The efforts of individuals can do nothing, this immense region of the fens depends for drainage on the outfalls to the sea, and on measures for deepening the rivers, and raising the banks which must be general. "Such is the present state of this most fertile country;" "but the evils great as they are, which have been hitherto felt, are not the whole of this melancholy business, for no doubt is entertained of the whole, or nearly the whole country being lost, if it remains in the present state. The enclosures of the upland country, the waters of which are all discharged into the fens, increase every year, and not one takes place without adding to the evil. With so powerful a cause constantly increasing, the rivers and cuts in the fens silting up, and the outfalls remaining unimproved, must in the nature of things gradually increase

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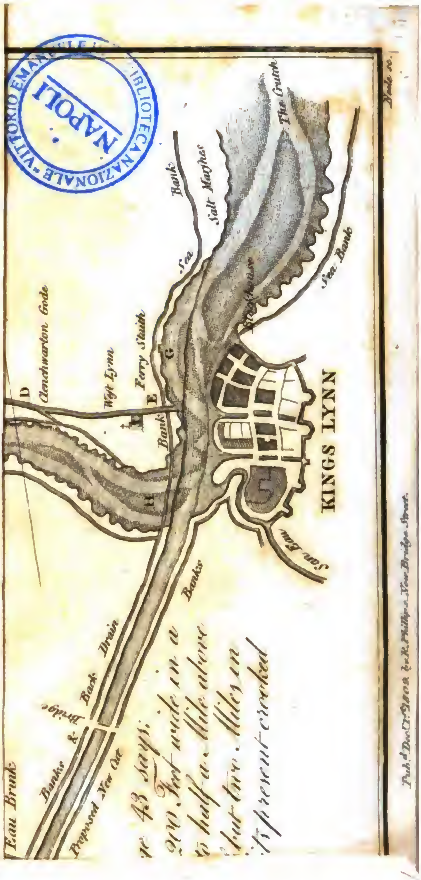

Pub.d Dec.r 1 1800 by R. Phillips New Bridge Street.

e 43 says:
200 feet wide in a
is half a Mile above
but two Miles in
its present crooked

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crease the influx of water, and lessen the capability of conveying it away. The consequence is obvious. The total ruin of the whole flat district must ensue. Mr. Ground, of Whittlesea, calculates the uncultivated lands and moors, &c. at 10,000 acres. Mr. Waudby, of March, at 6000, and also a further deduction of 12,000 acres more, (at 4 in 100) for ditches, in all 18,000. To keep on the safe side, I shall suppose 20,000, and that there remains 280,000 capable of cultivation, and which are or have been cultivated but subject to inundations"* "The fens are now in a moment of balancing their fate; should a great flood come within two or three years, for want of an improved outfall, the whole country, fertile as it naturally is, will be abandoned" Such being the melancholy state of this district, and its value being so immense (which I will soon shew), the necessity and wisdom of taking some effectual steps to secure and improve it, will not be disputed, nor will it, I apprehend, be doubted that such measures only will be adequate to the object, as will embrace the several interests of the concerned, and promote them mutually. Many projects for the better drainage of the fens, and the improvement of the navigation, have of late been proposed; the last passed into a law 1795, and is called the Eau Brink cut,† the benefit or evil, however, of which is yet to be known, a difference of opinion after passing the act, having arisen between Sir Thomas

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* Mr. Golburn of Ely, informed Mr. A. Young, that the quantity of land affected by the drainage was about 400,000 acres. Mr. Gardener, of Chatteris, thinks about 300,000.

† 1794, Eau Brink cut. It is presumed that the history of tidal rivers does not furnish an instance like that before us, where the upland waters from being confined nearly in a straight line, and to a width of 200 feet (as they are at Germans bridge), are suffered to wander as they approach their outfall into a rambling circuitous

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circuitous course, expanding to a width of nearly a mile, and thence returning to the same line that was before deserted.

As the case is singular so are the consequent evils. Internal navigation is rendered so defective, that boats cannot pass from Germans to Lynn without pilots, by means whereof great delays and a vast increase in the expence of freight are occasioned; and in blowing weather many lighters have been sunk, and lives have been lost.

The banks guarding the lands contiguous to the wide part of the river are supported at an enormous expense.

Drainage is so impeded that 300,000 acres of land dependant on the outfall of the Ouze, are in the greatest danger of being overflowed, nay many thousand acres of them are now under water.

Navigation from the port of Lynn to sea is injured by beds of sand, which are constantly becoming stronger and stronger for want of a proper scower, insomuch that no vessels can navigate, but such as are of a particular form and structure.

Hence foreign trade is enjoyed by a small number of merchants who are their own carriers, and the price of coals, raft, &c. is considerably higher at Lynn than it ought to be.

The remedy. It is proposed to desert the present wide circuitous bason above Lynn, and to confine the upland waters by means of a new cut to the same width at its commencement as the river now is at Germans, and to widen it gradually until it enters the old channel again a little above Lynn.

The effect. The upland waters and tidal waters flowing and reflowing through the new cut, when conveyed in half the time that is now required, will act in one uniform compact body, and with a force increased to so great a degree as to carry away all impediments.

Internal navigation will become safe, cheap, and expeditious, the weight of waters, and its lashing force against the banks will be wonderfully lessened.

Drainage,

Thomas Hyde Page, and Mr. Milne, (the engineer named in the act), for determining the dimensions of the cut, and there being no power in the act to compel these gentlemen to name a third engineer as umpire; nothing has been done but tracing the lines from the dimensions in the act at the lower and upper ends of the cut, and collecting the tax imposed by act; but as this project has long engaged the public attention, and is thought a subject of importance to the county of Cambridge in particular, I have been solicitous to obtain the best information on it. The advocates for the work assert,

1st, That upwards of 300,000 acres of land will be better drained.

2d, That the harbour of Lynn will be rendered safe and commodious.

3d, That the foreign and coasting-trade of the port will be extended.

4th, That the danger and uncertainty of the navigation between Lynn and Eau-brink, by the present channel will be avoided, and the remainder of the inland navigation improved, &c. &c.

The opposers of this measure contend that none of these benefits will be the result, but that the reverse of them will ensue.

Drainage, which is now impossible to be had, will be easy and practicable.

Foreign trade will be open to all the world, and monopoly, the sworn enemy to fair dealing, will no longer exist.

In a word, navigation, drainage, agriculture, will be amazingly benefited, and trade and commerce so diffused, that coals, raft, and other goods, will be infinitely cheaper, to the great benefit of the consumer, whose interest alone ought to be the main object of consideration, where trade is concerned; and, above all, the lives of his majesty's subjects will be secured.

Regarding the maxim, "audi alteram partem;" I will state the opinions I am in possession of, for and against the measure.

In 1775, Governor Powell. "The quitting the old river in this crooked, ruined, irrecoverable part of it, is become at least a matter of necessity; and the cutting a strait cut is the only measure left, by which to carry on a real drainage, by which to maintain for any great time longer, a practical communication of navigation between Lynn and the inland country, by which to preserve for ever Lynn itself as a great maritime town."

In 1777, Mr John Golborne. "It cannot fail to give immediate relief to both those (the south and middle) levels, and to lower the surface of low water at least four feet at Salter's load, Old Bedford, and Denver Sluice, and at the mouth of the New Bedford river."

In 1791, Mr. James Golborne. "I can form but one opinion, which is, that if such a cut should be carried into execution, it would be of more benefit to the middle and south levels, and also to all other low grounds discharging their waters into the river Ouse, in any part of it above the harbour of King's Lynn, than any work that hath ever been yet executed for the purpose of draining. This work seems to hold out as fair a prospect as any of so great an extent can, of doing as little private injury as may be, and will at the same time distribute its favours impartially with the hand of kindness to many worthy proprietors, and industrious occupiers of fen-lands."

"An inspection only seems necessary to convince every reasonable, disinterested, and unprejudiced person of the great advantages that will arise from it to both (i. e. drainage and navigation). It cannot fail to operate in a degree highly advantageous to the navigation above Lynn, highly advantageous to the general drainage of all the country, above that port, and particularly advantageous to the port and harbour itself. With respect to the navigation above Lynn, I presume that it would be an insult to any person's understanding to inform him that by the proposed new cut, the gangs of lighters may at all times navigate either up or down, with much more expedition, and with infinitely less danger than they now do, all the present wide, difficult, and uncertain channel from Eau Brink to Lynn. The risque that the gangs at present run in a passage at all times dangerous, but especially in tempestuous weather, will by this proposed cut be avoided. The expense of bridge pilots saved, the wear and tear of craft, the labour of men, boys, and horses lessened; the voyage performed with greater certainty, and in much less time than at present. The proprietors and occupiers of lands on each side the proposed cut, together with every person interested in the event, may rest with security, and not be under the least apprehension for the *safety* of such new erected banks. In a little time after the completing such cut, the land owners will be exonerated from a very heavy expense, at which they now are, and must be liable to, for the maintenance and support of their sea-banks and counter shores. In a little time after the finishing of this work, the present channel will very rapidly silt up, and become marsh. The tides will, if the cut be made, rise higher at Denver sluice, but not materially so. It is therefore most probable, under these circumstances, that the tides will not by the new cut be raised at Denver sluice above six inches. I am yet of opinion that a very high tide will not have that effect; but supposing on this account it should be found necessary to raise the lower part of the 100 feet bank, as far as Welney, for instance, being six miles, that may be done by the Honourable Corporation of Bedford level, without any expense to individuals, or additional expense to that body. The navigation up the Ouse, &c might be assisted by ebb-doors, and by deepening the river in places, so much as to give them a lasting and uninterrupted navigation up to Clayhithe, as perfect and as complete as most of the canal navigations in this kingdom, and the gangs would not then have occasion to wait in different parts of that river, on many different shoals, and for several days together, when they have a scanty head of water from above. The same method of relief may be given to Mildenhall river, and the result would be that craft would go with ease and expedition at all times, without unloading their cargoes as they are now obliged frequently to do."

" Expense, viz.

	£.	s.	d.
Conveying water of marsh-land into new cut	1887	4	6
New cut	38098	2	0
	39985	6	6*"

In 1791, Mr. Wattie. " It (the new cut) would be a certain drainage to all those border lands which have their outfalls into the river Ouse, below Denver sluice, and would prove effectually so to that valuable tract of land called marsh-land, except the low parts of the fen, the drainage of which could easily then be compleated by the assistance of an engine mill. I would therefore recommend the deserting of the present channel (making a dam across the same) and the opening of a new cut or channel, from Eau-brink, across the old lands and marshes to about two furlongs above Lynn. By the making of such new cut, and turning the channel, it would prove of very great advantage to those who have banks to support against the present channel, below Eau brink, which heavy expenses, in a little time, they would be released from. The old channel in a few years, would be quite silted up, and become good and firm land, the sale of which would in great measure pay the purchase for lands used in the new cut, its banks and forelands. The effect which the proposed cut would have upon the navigation in the river Ouse, would be of great importance to trade, as shortening the distance would accelerate the passage of the craft, going thereby to and from Lynn, and render the same safe at all times; they would then be conducted by a channel sheltered between banks, and not liable to be exposed to the violence of the winds and tides, and danger of the sand-banks which now attend the navigation, through that dangerous river, or rather bay, from Lynn to St. German's bridge, where merchants and traders meet with so many disasters, losses, and frequent delays, that trade is now carried on thereby with great hazard, much difficulty and considerable expense. As to any idea or fear the traders may have of the craft being rendered unmanageable by the rapidity of the current, that would be extinguished a little time after the intended cut or river was opened, particularly if a land flood should quickly follow, as the current shortly after that would run smoothly, or in the same manner as the upper part of the river above German's bridge now does. The effect it might have upon the harbour of

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* Since this many other estimates have been made, some amounting to double the sum.

Lynn, I cannot conceive would be attended with any of the dangerous consequences as some are so much alarmed at; but on the contrary would be great use thereto. If the waters coming through the cut were properly pointed down the channel through the harbour; and exertions used to assist it by throwing out jetties, &c. &c. at proper places; by such means there would be a great probability of bringing the channel along by the town at such distances as desired,* and to fall down to the crutch in nearly a straight direction. As to the danger of the current raising sand-banks or bars across the channel, as seems to have been suggested by some, I cannot by any means agree to it. They (the tides) would certainly flow *something higher* in still tides, against the banks above, than they now do. The banks above would be in no more danger of being overflowed, after the new cut was made, upon the dangerous tides, than they are at present, but this I think admits of a demonstration."

In 1793, a member of the committee in a pamphlet called "Reasons attempting to shew the Necessity of the proposed Cut."† "The great impediment to both drainage and navigation, I apprehend to be, the wide, shallow, and crooked channel of the river Ouse, between St. Germans' bridge and Lynn. I do not pretend to say that this is the only one, but it seems to be the first and greatest, and that all interior works can be of little use while this remains unremedied. The cut in question was first proposed by Mr. Kinderley, about the year 1720,* and again by his son in 1751. The father was himself a conservator of the great level of the fens. and had devoted the greatest part of a long life to this particular study, and it is the scheme which he recommended and invariably adhered to. The son is no less confident of its necessity, and ventures boldly to assert, that whatever other schemes may be invented or remedies proposed, they will in the end prove ineffectual, and that how much soever prejudiced people might be against it then (1751), yet at one time or other, when driven by necessity, they will be forced to make use of it, otherwise this whole country, together with the navigation of those rivers which pass through it, must in time be inevitably lost."

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* "It is to be hoped Mr. Wattie will take our granaries, &c. to this channel." Thomas Brome, Lynn.

† "This pamphlet with the abstract of the reports and opinions upon both sides of the question, contains the substance of almost all the material information that exists upon the subject, plainly and impartially stated." See Earl of Hardwick's Observations on the Eau-brink cut.

In 1793, Mr. Rennie, " to remedy these (the existing) evils, there cannot be a more effectual way than by directing the whole waters of the river Ouse (assisted by the returning tide of the last half-ebb) against the sand-banks in the harbour, which will be completely done by the proposed cut. By this cut, the tide and river water at the last half ebb will have a greater scouring power than before. I would also recommend jetties on the shore at West Lynn, they are likely to open the east channel to sea. By scouring away the sand banks in Lynn harbour, the water will be deepened; ships therefore of greater burden will come to the town, and ride in safety. The surface of the water in the Ouse upwards,

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* Mr. Hodskinson says, " the Eau-brink cut is only a part of Mr. Kinderley's plan.

wards, will be lowered for a great distance, until it expires in a point; hence every load, river, or drain, connected therewith must be proportionably benefited. Islington and West Lynn drains, will then have a much better outfall, and the drainage of marsh-land greatly improved. By lowering the water at Denver's and Salter's load sluices, the middle and south levels will be equally benefited, as well as Stoke, Brandon, Mildenhall, Soham, Reach, Swaffham, and Bottisham loads, with the country drained thereby, and I think it unnecessary to open St. John's Eau. The flood-waters will find an ample passage to sea, by the proposed cut; the inhabitants of Marshland will be relieved from a very heavy expense in supporting their banks. The navigation from Lynn will be more safe and expeditious, and the banks of the 100 feet are so strong, and at so great a distance, that they will have little to fear from the increased tide." "The navigation above Denver sluice may be preserved and improved by shutting the ebb doors of sluice, and deepening the river upwards. The navigation between Upware and Clayhithe will be injured, which may be rectified by a lock placed near Upware. "If Swaffham and Bottisham loads should not have a sufficient declivity for carrying off the waters of their respective districts, they may be carried along the inside of the banks to Reach load, where they may jointly empty themselves into the Ouse. I do not see a more effectual way of improving the outfall than by the proposed cut, which therefore ought in my opinion to be supported by every person interested in the drainage of marsh-land, the grounds adjoining the Ouse, the south and middle levels, and the improvement of Lynn harbour."

1794.

1794. The Earl of Hardwicke, in "Observations and Proposals, &c. &c." "From every thing that I have heard and read upon the subject, I cannot help thinking but that the intended cut will be of great advantage to the Isle of Ely. Undoubtedly some lands will be much more benefited by it than others, for the advantage will be in proportion to the state in which they (the lands) now are. It is to be expected, however, that some advantage will accrue to every part of the isle, and that when once a good outfall is obtained at Lynn, the expense of banks and of mills, without which many estates would be under water a considerable part of the year, will gradually diminish, and probably come at last totally unnecessary.

Mr. Hudson. "I am therefore of opinion that if the old neglected river, from its junction with the Cam through the hermitage sluice or lock, into the upper end of the 100 feet river, were restored to a proper width and depth, the drainage of the fens in Haddingham would be greatly improved, and also the fens in the south-side of the said old river." "And if the shallows in the river Ouse from the Cam to Denver sluice were lowered, and the proposed new cut effectually made, I am of opinion, that in all ordinary seasons, Haddenham, Wilburton, and Streatham fens, will be drained without the use of engines." "The fens in Little-port, though lying much lower than Haddenham, being much nearer the outfall, will receive the same advantage. "Of course it (the new cut) will very much improve the drainage of the Littleport district." (His lordship offers a subscription of 500*l*. to enable the smaller land owners to pay the tax, and when 2,500*l*. is raised for that purpose, will give 500*l*. more). "Upon a general view of the question, I was

I was of opinion from the beginning, that the scheme (the proposed cut) promised the greatest advantages to the whole level of the fens; and every thing that I have since read and heard upon the subject, has tended to confirm me in that opinion. Indeed if the plan is properly executed, with a fair view to the public benefit, without any part of the fund being diverted from the main object, it is likely to prove in its consequences the most effectual plan that has been suggested for the improvement of the fens, since their original drainage in the last century, by the Earl of Bedford." "To the town of Lynn the benefits will be so evident, that it is difficult to account for the opposition of so many of the respectable merchants of that place. The operation of the new cut, would in the opinion of the different engineers that have considered the effect of it, not only improve, but absolutely preserve the harbour of Lynn. The improvement of the harbour must of necessity increase the general trade of the place, by opening the door to new enterprizes, and of course to the introduction of new ship owners, and new merchants. At present the shipping of Lynn is calculated for their trade only, and for the present mouth of the channel, and no vessel with a sharp floor, and which is not of their own peculiar construction, can venture into the harbour, or at least remain there with any safety.* The consequences of this must be the exclusion of ships from other ports, which is so evident a disadvantage to the trade of a maritime town, and so great an obstacle to the increase of the general wealth and prosperity of the inhabitants, that it is scarcely to be believed they will concur (if in truth they have concurred) in opposing the plan. With respect to Cambridge, the alarm originally conceived by the merchants and navigators must be considered as a fortunate circumstance; the inquiry that it has produced, and the provisions that are inserted in the bill, will eventually not only secure, but considerably improve the navigation of the Cambridge river."

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* "It is not necessary to have ships of any particular construction for our harbour." Thomas Brome, Lynn.

In 1729, Mr. Humphrey Smith. "It (the new cut) will (in my opinion) be the utter ruin and total loss of the port of Lynn, for the wide space between German's and Lynn, gives room for the tides, and serves as a large receptacle for a back water to scour out their haven, which if confined by the methods prescribed, the silt and sand of the sea water would raise such a bar, that their shipping could not get over."

In 1745, Mr. Labelye. "I am of opinion, and ever shall be till better reasons be given than any of those which I have seen hitherto, that such a new cut, (the Eau-brink cut) would prove of more detriment than service to the draining the fens, by its lessening one of the means of preserving a good outfall to sea, and prejudicial to the navigation of the port of Lynn."

In 1767, Mr. Smeaton. "I cannot agree in recommending the expedient (the proposed cut) for if the cut be not made equal to the mean capacity of the old river, it would check the influx of the tides, and *if so made* the event must be uncertain."

In 1775, Sir Thomas Hyde Page, Knt. "I am of opinion that if (the cut) had not at the first receiving of the water a very considerable breadth and depth, particularly near the outfall, the run of water from the sea into it, being very violent, would carry great quantities of silt, &c. from its sides and bottom, which might be dropped higher up the river, and as the ebb at Lynn is so much slower than the flood, it probably would not have sufficient force to carry it out to sea. This danger might be the greater in a dry season, upon a want of fresh water in the river to counteract the inlet of the tide. Although in general I condemn a winding channel, when a straight one can be obtained; it has its advantages when the sea comes into it in a shorter time than it requires to go out again, the case at Lynn."

In 1778, Mr. Elstebb. "The tide waters filling so large a bason as Lynn harbour, and endeavouring to continue their whole motion, a great part, by the opening of the new channel (the Eau-cut) being directed towards it, will (by the smallness of its dimensions) be compressed into it, and impelled through it with so great a rapidity, especially in spring tides, that the trains of small boats they navigate with in that river, either with or without horses, will be entirely unmanageable, will run foul, or break from one another, swinging across the river, be frequently overset and sunk; and they will for some time be obliged so wait the approach of high water, that the rapidity of the current may be abated, before they obtain a safe passage through it; consequently it will be so far from being at all times a ready passage, that great and constant delays may be expected from it, and how long they may continue, is not easy to determine. And besides the disadvantage to navigation by the interruption of the passage, there are other effects which may be reasonably apprehended from it, so long as Denver sluice is left standing. The acceleration of the motion of the great part of the tide water, in Lynn harbour tending towards the new cut, and the rapidity of the current through it, will carry large quantities of silt into the upper parts of the river, which will plentifully subside in those parts of the channel which are now the deepest, and will soon fill them up to a level with the most shallow parts. In vain, therefore, are the expectations of great advantages to the navigation from the new cut, while Denver sluice is standing, and in vain are the hopes of a perfect recovery, and a full improvement of the fens, until the levels are properly and sufficiently embanked."

In 1792, Mr. Hodgkinson trusts "he shall convince every unprejudiced person that the execution of the proposed scheme (the Eau-cut) will be productive of very alarming consequences to the trade and navigation of Lynn, Ely, Cambridge, and country adjacent. The tide having a less distance to flow, it will be high water at German's bridge much sooner than at present, and of course the waters will return to sea much sooner also, and before the tide at Lynn is fallen sufficiently to give them that grinding effect which they now retain by having a greater distance to come, so that Lynn harbour will not only be deprived of twenty millions of tuns of back water, but the remainder will be partly deprived of that scouring effect which it now possesses. It has been repeatedly asserted, and I believe never denied, that upon the erection of Denver sluice, and opening the 100 feet or new Bedford river, the tides being stopped by means of that sluice, occasioned a stagnation in the water against the sluice; thus a great quantity of silt being brought up by the tides was deposited there, which the tides in their reflux, being so much diminished could not scour away, by which means the bed of the river in a short time became silted up; just so it will happen at Lynn. I am aware it will be argued, that the silting up of the river below Denver, was owing to the new Bedford river not being so deep as the river below, but that the new cut being intended to be of equal depth with the harbour below it, the same consequences which followed the stopping the tides at Denver, are not to be apprehended here. I beg leave to observe that it was not owing to the new Bedford being so shallow, but to the great checks which the tides met with at the sluice which occasioned the silting up below. The channel from Lynn Deeps to the harbour, is preserved in a navigable state by the influx and reflux of the tides; every diminution, therefore, in the quantity of that influx, or check to its velocity (both which will be the consequence of embanking the wide space between St. German's and Lynn) must lessen the very great assistance it now affords towards keeping open that channel. That inundations will be rendered more frequent and more dreadful in their consequences, from the sudden check these raging tides will meet with in entering the New Cut, must be apparent to the meanest capacity. The current will be forced up this straight, narrow channel, with such increased velocity that the gangs navigating at that time will be rendered totally unmanageable, and be frequently overset and sunk. This scheme (the New-cut) is only part of Mr. Kinderley's plan. The late Mr. Golborne was the only engineer prior to Mr. Wattie, who publicly recommended a part only of Mr. Kinderley's plan: every other engineer (whose works have come to my knowledge), has uniformly condemned it, amongst whom are Labelye, and Elsteb."

Sir Thomas Hyde Page to Sir Martin Folks, Bart. "Whether the cut would really save or ruin the country, does not seem to be proved. We now find Messrs. Golborne, Wattie, Hudson, Milne, and Rennie, engineers, in favour of this cut. I doubt not from their experience and character of their believing it would be materially beneficial. Against it are the names of Smeaton, Hodgkinson, Nichols, and other engineers of former times, these gentlemen from experience and character also have a right to notice; they have judged that the Eau brink cut would not only ruin the drainage, but inland navigation and Lynn harbour. These gentlemen having upon a point of science in long written reports, been so directly opposite in opinion, I own I see no way for the country gentleman or merchant to make up his mind, and at last I fear conviction, as to the propriety or impropriety of this measure, must be the effect of some dangerous experiment, which by rendering the country much worse than it now is, will shew the necessity of a general plan of drainage, of which I conceive the Eau brink cut *would be no part.* I think it ought to be considered as a measure in which infinite public danger is involved, while the benefits remain exceedingly doubtful. I am of opinion that it would be wrong to make any work that would lessen the quantity of water brought up by the tides, too much mischief having already been experienced by Denver sluice, which stops the tides from passing as they formerly did; the indraught was considerably lessened by that sluice, and Lynn harbour must have suffered a loss of depth. I fear the loss of the great space from Lynn to German's for a back water upon making Eau-brink cut, would bring after it the loss of Lynn harbour, for ships of the size that now trade there. My opinion, such as it is, I have expressed to be against the Eau-brink cut, as I fear its effects would be injurious to navigation, to the free lands, and also to the corporation lands of the Bedford level."

In 1793, an inhabitant of Lynn remarked. "The rapidity with which the present upper ebb current runs, in the deepest part of the bay of the haven at Lynn, from the Ball point to Common South Quay, sometimes drives ships fromtheir moorings and puts them in danger of stranding;

ing; more probably, therefore, neither the moorings in their present state, nor others of a stronger construction, will be able to withstand the force of it, should the new cut be made. Instead of the current through the new cut scouring the harbour, as it is pretended it will do, the reverse will probably happen. The haven above the Ball is protected from the violence of the land floods, accompanied by the strong ebb at spring tides, by that very point or neck of land intended to be cut through, which at present, by giving the river a curved direction, and a circuitous course round it, lessens the impetuosity of the current, and shelters the ships at anchor from the violence of the torrent. The banks most probably will not stand, because the gault must be dug through, and the quagmire exposed to the rapidity of the torrent. If the wide expanse of that part of the river, in the vicinity of which the new cut is to be made, and which in many places is three-quarters of a mile in breadth, was unable to receive and contain this sudden and vast accumulation of water in any of those inundations, (enumerating many) how is it possible that the narrow cut intended to be made, could carry even the waters of land flood combined with the ebb of a spring tide, with safety? and how much more must be the danger of inundation, when the two powerful agents, a high spring tide of flood, and as torm of wind at N.W. operate with impetuous force against the current of the land flood in this narrow cut. The water will, beyond a doubt, soon be raised to an immense height, overflow the banks, and carry destruction over the face of the neighbouring country." He attributes all the mischief which has arisen to drainage and navigation, to the erection of Denver and other sluices. "To prove this we shall shew,

"1st. The good state of the Ouse, and of navigation and drainage, till Denver dam and Hermitage sluices were erected, and the New Bedford river made.

"2d. The sad condition of navigation and drainage since those works were made."

"In 1423, The river Ouse was so deep between Salter's Lode and Lynn that its bottom was fourteen feet under soil. It was then famous for navigation and draining the adjacent country."

"In 1605, low water mark was ten feet lower than the superficies of the fens at Salter's Lode, but there wanted drains to convey the fen-waters into it."

"In 1618, The commissioners of sewers found the river Ouse from Salter's Lode to the outfall at Lynn, much increased in breadth and depth, and that it had a very quick current."

"In 1619, The outfall of the river Ouse, ample and great, gave large passage for the fresh waters from the inland counties, and also to the tides from sea, insomuch that the haven of Lynn had been worn wider and deeper in memory of men."

"In 1645, ships rode in Lynn haven at anchor in twelve feet water at low water. The channel to sea-ward was so wide and deep, that the biggest ships could sail between Lynn and the sea with neap tides."

"In 1649, the inland navigation was so good in all the rivers, viz. Ouse, Stoke, Brandon, Mildenhall, and Grant, that keels could sail with forty tons freight, thirty-six miles from Lynn towards Cambridge, at ordinary neap tides, and as far as Huntingdon with fifteen tons."

"As the rivers were thus famous for navigation before those sluices were built, so were they also good sewers for the fens to run through." E.G.

In 1618, Mr. Atkins says, "had the river Ouse been deepened between Erith and Ely, by removing the weres, the fens would have been good meadows," so says Lord Popham.

In 1619, Sir Clement Edmunds said, that "the country all along by the river Ouse both in Cambridgeshire and in the Isle of Ely, being a *very rich soil and well inhabited*, was not much troubled with water, but in time of floods caused by weeds, weres, and gravels, but would not have been drowned if those stops to the floods had been removed, because below Ely the river has a swift current, and gives a large passage for the fresh water."

"In 1650-1, Denver dam and sluices were erected. Immediately after this the rivers silted up from the said sluices quite to sea, insomuch that in two years ships could not sail between the sea and Lynn, but with spring tides only, whereas before they could with neap-tides. In the haven there was then but the depth of two feet at low water, where ships used to ride in twelve feet at low water. The river between Lynn and the sluices had its bottom raised with silt sand ten feet high in two years. As to drainage they (the sluices) were more pernicious, and losses to the amount of 100,000*l*. were sustained during the time Denver sluice stood."

"In 1713, The tides undermined Denver sluices, and blew them up (but not the eight feet dam), and since that time the spring tides, which do put up into the rivers of the south-level, drop their silt in those rivers, and the land-floods drown the south level, and drop their sullage, and choak up the Ouse towards Cambridge above one foot every year. Thus spring-tides and land-floods, these which used to keep open the Ouse, do now by means of works choak it up, insomuch that the bottom of the Ouse (which was before the adventureship fourteen feet under soil) is now raised higher than the superficies of the fens, and yet part of the south-level is usually three feet under water at May day. Thus that level (south-level) which was before the adventureship good and profitable summer land, has long been and is now drowned and impoverished; so also is great part of the middle level, and 60,000 acres of land in Marsh-land and Freebridge, and Blackclose, which were before rich meadow and pasture. As these artificial works have been by fatal experience found to be the ruin of draining, as they will also of navigation in four or five years time, the Ouse ought to have that natural course given it again which it had before the adventureship, when it was famous for navigation, and wanted only to have been embanked in some places and cleared of gravels, to have it made absolute for draining, and when the freshes have their natural course again, and the tides free admission into their ancient receptacles, and the rivers embanked, as Lord Gorges, and Colonel John Armstrong advised;* the river Ouse, Lynn haven, and the channel to seaward, will be reinstated in their ancient depth, and become famous both for navigation and draining in a short time. The promoters of the intended cut, expecting that the making a dam across the river at Eau-brink, will cause a depositing of silt, which will soon fill up the curved expanse from Eau-brink to Lynn, is in fact acknowledging that Denver sluice is the cause of the subsiding of silt, and forming sand-banks from thence to the mouth of the river, as repeatedly observed ever since it was erected."

In 1777, Mr. Creasey. "It is not easy for any one to assert positively that this work (the Eau-cut) will answer. The width of the present outfall at Lynn, being at the narrowest place near 300 yards, we ought, agreeably to what nature will require, to give at least the same width to the lower end of the proposed cut, and the upper part of it should be equal to the old channel at the German's bridge. Then it may be safe to make it, but not otherwise, as under smaller dimensions the indraught of the tides, would soon destroy its banks, and might probably carry the silt, &c. and form dangerous bars higher up the river. There would certainly be great risque, as the tides come in very rapidly at Lynn."

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* Lord Gorges in 1682, Col. John Armstrong in 1724.

"Correspondence between Sir Thomas Hyde Page and Mr. Milne, 1801 and 1802. "Mr. Milne agrees with the Bedford level corporation, in their opinion expressed in a paper of their Minutes, wherein they express their serious apprehensions, that if the proposed cut should be too wide, the expectation of the country with regard to the scouring and keeping open the outfall, will be disappointed. Mentions another estimate by Messrs. Golborne and Wattie, amounting to 53,000*l.* Mr. Milne's estimate by his plan for Eau-cut, 40,000*l.*, for ditto, Marshland upper ground, 2,400*l.*"

Sir Thomas Page, says "the narrow cut proposed by Mr. Milne will not serve Lynn harbour, but that the direct reverse will be the certain consequence, and that instead of scouring away the present shoals, they would be increased. The flood tide would be suddenly checked in entering the cut, and the velocity of the stream lessened there; while the torrent through the narrow cut above would be too great for any kind of navigation upon it. Immense quantities of sand or soil would be carried with the flood tides from the sides and bottom of the cut, and from bars and shoals higher up the old river, which the returning ebb might not carry back again, before the upland waters had risen above the banks, and inundated the country." Sir Thomas observes, Mr. Milne's estimate of expense of executing the cut, is not more than one-third of the real expense. Sir Thomas is of opinion, that drainage and navigation require a strict observance of the dimensions in the act for the proposed cut. At a meeting at the shire-hall, Ely, April 19th, 1777, three estimates of the expense that would attend the proposed works, were proposed, viz. of 145,000*l.* of 150,000*l.* of 180,000*l.* each. Such are the opinions (of which I am in possession), of professional gentlemen on this subject; I will add those of others which have come under my notice.

Mr. Vancouver. "The proposed cut presents to us a probability of lowering the water twenty-five inches at Denver sluice, and an hope that in time the advantages resulting from that measure may be greatly improved. The result, however, from the whole of these considerations ought to be regarded more as the probable consequences than the certain effects of the proposed measure. The good effects cannot possibly extend to the complete and effectual relief of the middle and south levels, these can only be relieved through the channel at Wisbech."

Mr. A. Young, (Annals, v. 43, p. 547, &c.) "The commissioners (of Eau-cut), were by act empowered to borrow 78,000*l.* and to lay a tax of 4*d.* per acre, on 300,000 acres, to pay the interest and sink the capital. This tax would of course raise annually 5,000*l.* viz. interest of 100,000*l.*; and we have seen that in the opinion of engineers, from 145,000*l.* to 180,000*l.* will be required, and now (1807) it is said a still larger sum. Mr. Ground, of Whittlesea, observed to Mr. A. Young, that if the Eau-brink cut was made, Whittlesea meer (1,500 acres) might be easily drained, but that the drainage of the meer without that cut would be a ruinous business, for it would demolish all their banks on every flood that came. Mr. Ground is perfectly satisfied of the great importance of the Eau-brink cut, and remarked that it must be followed by a complete scouring out of the rivers. Messrs. Edes and Nichols, (of Wisbech and Elm) assured me that all their country would be lost, if something effective is not done, for its better drainage. They are of opinion that the Eau-brink cut would render the outfall all that is to be wished, and after that was executed a scouring out the rivers, and heightening the banks would finish the work. They lament the delay of putting the work in execution, having suffered dreadfully by inundations. Mr. Saffery, of Downham, contends strongly for the Eau brink cut, and is clearly of opinion that if it is not made, the whole 300,000 acres will be lost. Among other proofs that the Eau-brink cut would have the expected effect in draining the fens, Mr. Saffery remarks a circumstance that is certainly striking. At Setchithe bridge there are two drains, one the Puny drain which empties itself near Lynn; the other the Polver drain emptying near St. Peter's church, between Magdalen and German's, their mouths six miles asunder. The lands on the former will be dry, while the latter are under water. The first enjoys the same outfall as the proposed Eau-cut, but the other pursues the course of the present river, this is an experiment in constant action of the present and proposed outfalls. To convince me of the necessity of a better outfall, Mr. Saffery proposed my taking a boat to Lynn, and examining the channel below German's bridge, and he had the goodness to accompany me. I sounded every where, and the general fact is, without exception, that wherever there is a contraction of the channel by sand banks, or a comparative narrowness of space, there are at low water, six or seven, or more feet of water; but wherever the channel expands, there it shoals to three, and two, and even less than two feet: this was the result of above a hundred trials; and the conclusion is palpable, that if the stream was confined to a channel of a proper breadth and in a straight line, it would scour itself a free deep passage, and the shifting evil of these sands would give way to the regulated effect of a limited and properly directed current. Mr. Gardner, of Chatteris, thinks that the Eau-brink cut will effectually assist in draining the two levels, but not to the greatest perfection without scouring out the river. Mr. G. asks whether the fact that the small rivers have no outfall, till the great wash is free from water, does not prove the necessity of the Eau brink cut. That cut would speedily clear the old Bedford and other interior drains, and consequently give a fall for the water of the small rivers. Mr. Bateman, of Chatteris, is clearly of opinion that the Eau-brink cut would answer the purposes expected, and give such an outfall as would secure the future drainage of the fens. If the Eau-brink cut was made, it would, alone, and unconnected with any other object have immense effects, but these would not go to their full extent without scouring out the rivers. Mr. Custance, a surveyor at Cambridge, is of opinion that the Eau-brink cut would be a most effective measure, and that if it is not executed, the whole country will be lost. He considers the effect of the late great floods as proving this, for they scoured out the outfall so much, that it has not of a long time been in so good a situation as at present. This idea is quite consistent with Mr. Kinderley's, of uniting different rivers in one channel, for obtaining a great flow of water for scouring.

The Earl of Hardwicke. "On the 15th of December, 1794, Mr. Yorke, Mr. Bell, Mr. Saffery, and myself, went down the river at time of low water, from German's bridge to Lynn. The following are the observations that I made of the depth of the water in different parts of the channel. From German's bridge to the point where it is intended to begin the new cut, the river is narrow, between good banks, and of a sufficient depth, but as soon as it expands over the channel half a mile or more, it becomes shallow, and forms those obstructions that have been so long complained of as the great impediments to drainage: opposite Tilney Goole, where the channel was half a mile from bank to bank, the depth of water was only two feet four inches. It was of the same depth opposite a mill near Islington shore at twenty minutes past eight, and in the middle of the river opposite Tilney shore, looking into the Delph, it was only one feet ten inches, in the middle of the river at thirty-one minutes past eight. In the Delph, where the river is 100 feet wide, the depth was six and a half feet, and as the river widened, the depth diminished to two feet, and from that to three feet. At Hull's ball it was four feet one inch. At Clenchworton Goole, two and a half feet, and at the point where the cut is proposed to come into the river near Lynn, it was six feet deep. These observations were made at the time of low water, or within half an hour of it, and it is remarkable that from the observations made by a person at Denver sluice, the water fell only one inch from seven to eleven o'clock, and when it was at the lowest, it was nine feet eight inches deep. This circumstance clearly shews that there is no impediment at that place, and the soundings of the river from thence to Eau-brink, prove distinctly that the impediment does not begin till the channel of the river begins to widen, and the water of course to lose its force. Such were the most prominent features of the information which I received in favour of the proposed works at Eau-brink, and, united with a great mass of other circumstances produced before parliament, were of weight sufficient, notwithstanding a very hot opposition, to carry the measure through both houses. It should not, however, be concealed that opinions, to this day, vary considerably on the effect which would result were the cut made. Of the objections to it which I heard, the following only deserve attention. Messrs. Rayner and Hardwick, of Wisbech, contended that the deficiency in the present drainage is not the want of a better outfall, but that of better keeping the interior rivers and cuts, which through neglect are silted up, and as a proof of this they observed there being a considerable fall into the new Wisbech canal, at the same time that the lands about Whittlesea were under water, that canal began to run in assistance of the drainage, when the water in the sluice at Wisbech was at the eight feet six inches mark, it sunk to three feet ten inches; consequently with a fall of four feet eight inches, while the Whittlesea district was still under water; shewing that an outfall is not so much wanted as interior scouring, and reparations. The next objection was from Mr. Thomas Malin, of Southery, who asserts that the great impediment in the outfall is not below German's bridge, but between Denver sluice and that bridge, arising from a hard bottom of the river, which wants removing, and from the contraction of the bridges being too great for the admission of ice floods. These removed, and the interior drainage improved, he conceives that the Eau-brink cut would be unnecessary." (N.B. It is conceived these objections are answered in the preceding observations.)

Such are the opinions on this important subject; *all* agreeing that *something must be done, or the country will be lost*, encourages the hope that some effectual steps will, before it is too late, be taken. Hope may now with more reason than hitherto be entertained on this subject, the dispute respecting the dimensions of the cut, &c. &c. being adjusted, and power obtained (by act of parliament), to collect five years more tax from Lady day 1805. N.B The tax is 4*d.* per acre, and the extent subject to it, is 308,000 acres, as ascertained by a late measurement, consequently it amounts annually to 5,133*l* being interest at five per cent. on rather more than 102,000*l.* not nearly sufficient to pay interest on the sum said now (1807) required.

If further testimony be wanted to convince any one of the importance and value of the fens of this county, I would refer him to Mr. Young's account, of which the following is an extract. (Annals, v. 43, p. 551.)

Produce, supposing the drainage secure.

Oats	52,739	acres at 7 quarters	per acre.
Wheat	33,036	at 3½ quarters	
Cole*	33,036	viz. seeded 3 qrs. fed 35*s.*	
Grass	161,189	from 16*s.* 25*s.* to 40*s.*	
	280,000		
N.B.	20,000	moors, ditches, &c.	

This produce Mr. Young values at 1,000,000*l.* per annum, and Mr. Ground, of Whittlesea, from different data, makes about the same amount.

Having considered the works thought necessary for the effectual improvement of the fens in general, those required on particular districts of them are next to be noticed; these are their drainage individually, which, according to the arrangement of the Board, will be the subject of the next section.

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* 9000 acres seeded.
24036 acres fed.
33036

SECT. II.—DRAINAGE.

THE interior drainage of the fens is performed on particular districts by mills, whose working depending on wind, they are often useless when most wanted, and the proprietors consequently sustain material injury; to remedy this, steam-engines have been recommended; and I found many persons in the county entertaining an opinion that they would answer. Mr. A. Young, (Annals, v. 43, p. 569), gives the following account of one. The Rev. Dr. Cartwright informs me that one of his improved engines, at the price of 1,400*l*. (building included), would lift six feet high, one thousand acres of water six feet deep, in eight days and a half, working day and night, and consuming forty bushels of coals in twenty-four hours, cost therefore, interest on 1,400*l*. at ten per cent. 140*l*. and if erected for a work equal to,

	£.	s.	d.
Four such drainages in a year, the proportion of 1,000 acres once cleared would be	35	0	0
425 bushels of coals, at 45*s*. per chaldron	21	5	0
Attendance 5*s*. per day	2	2	6
Carried forward	58	7	6

Brought forward	58	7	6
Suppose repairs	10	0	0
	68	7	6
Say	70	0	0

At this rate 70*l*. clears 1000 acres of water six feet deep, and the work done with certainty at the time when most wanted. The gentlemen of the fens are the best judges whether their present mills equal this operation of steam."* Mr. Wright erects engines of various powers, and at proportionate prices, from 180*l*. to 1000*l*. &c. &c. Mr. E. Savory, Jun. of Downham, Norfolk, (bordering upon the Cambridgeshire fens) thus writes on steam engines to the Board of Agriculture. " From the best information I can get, a steam engine complete, I understand would cost about 1,500*l*. having a twenty-horse power, which is supposed to be capable of discharging as much water, as a mill with a forty feet sail when in full velocity. The quantity of coals to work a steam-engine of this description, from the same source of information, I learn would be about twenty bushels consumption in twenty-four hours. This expense may be reduced, however, in a principal degree, by the collateral heat of an oven so constructed, that in the operation of turning coals into cake, or cinders, it may afford a considerable share of the heat required, and it is supposed to be worth about three-fourths of the price of the coals. The advantages that are to be derived from steam to the fen-country are almost incalculable. In case of intense frost, the uniform velocity, with the opportunities of communicating heat, would prevent the engine from freezing, to which, from the uncertainty of winds, the other engines are very much subject. The consequence is, that a great fall of snow coming at the same time as the mills have not been in a state to prepare the ditches to receive the waters which it occasions, an inundation very generally takes place in the fens; and as the waters rise very rapidly under these circumstances, after a thaw, it consequently occurs that when the mills are set at liberty from the effects of ice, they are for some days incapable of throwing against the head in the rivers, owing to the freshes from the high country preventing a discharge of water from the small into the great rivers. On the other hand, by adopting the means of steam, the engines would be working in full effect during the continuance of frost, if necessary, and therefore the ditches would be in a state adequate to the reception of the waters upon a thaw; as what they previously contained would be discharged into the rivers and at sea, at the time of its taking place; and as they usually are low in the continuance of a long frost, the circumstance affords another advantage. Until a power can be commanded at will, for the drainage of the fen-country, it can never attain its full prosperity. Whether the motion is acquired by the power of steam independently of wind mills, or by attaching steam engines to those of wind(which I am informed is very practicable) to work only when the weather is calm, I must assert it as my positive opinion, (which experience and observation daily strengthen), that the benefit to the public will never be equal to two-thirds of what it would be from this description of country, as if the means of steam were resorted to for the drainage of it. As to a district of country which requires draining, without any engines upon it at the time of its being undertaken, it is a matter of doubt in my mind whether it could not be drained more œconomically by steam than by the means usually adopted, although the expense of fuel must certainly be very great. Taking the average of winds, the mills in the winter season do not throw so much water in a week, as they would in one-third of the time, if they went in all the velocity of which they are capable. It follows, that one steam-engine with equal powers, would do as much execution in the course of a season as three windmills; and consequently, a great saving would accrue in the first expense, and afterwards in attendance and repairs." (Communications to the Board of Agriculture, v. 4, p. 52).

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* A fen wind-mill for draining, costs about 1000l. and is supposed sufficient for 1000 acres.

Necessary as drainage is to fen-lands, there are instances of its having been absolutely ruined by it; a remarkable one is at Chippenham, at Mr. Tharp's mill, where a very deep cut was made to carry off the tail water; the effect on the land on each side (a fen moor) is, it cracks in summer to that degree that it produces nothing, and no cattle can go upon it in safety; when, therefore, fen is drained, it is necessary to have a command of water to be kept within a foot of the surface. Mr. Tharpe has done this with great judgment by sluices.

On the subject of drainage of uplands, by hollow draining I collected the following:

At Cambridge St. Giles. 1st, Plough as deep as you can with common plough, then take out one spade with common spade; fill up with stones and bean-straw on the top of them; drains a rod asunder, lead all into ditch; effect very great; expense 5*s.* per score rod, labour.

At Madinglay. 1st, Plough, then one spit with draining spade, distance of drains one rod; fill up with black thorn bushes and sedge, answers well. Expenses 2*s.* 6*d.* per score, labour.

At Childersley. Drains cut in furrow, fill up with wood and straw. Expenses, labour 3*s.* to 3*s.* 6*d.* per score, answers well, and the practice is gaining ground apace.

At Harston. Rev. Mr. Leworthy, puts haulm (tied at each end by barley-straw), upon the *top* of the cut made by draining spade, not into it, shovels mould over it. Expenses, labour 4*d.* per pole, answered well. Mr. L. also used wood in the same way as he did haulm, but prefers the latter. He cuts his drains across the fall of the field, regardless of the furrows ; his land lays on the flat ; they were formerly "high backs ;" he thinks the injury from levelling them only temporary, leads all the drains into ditch. Mr. L. plants in his open drains, on his low grounds, oziers, and finds they prevent the drains filling up.

Mr. Vancouver speaks of the following hollow draining.

At Horningsay. "Some hollow draining has been lately done, in the wet parts of the open fields, between the lands ; made eighteen inches deep below the bottom of the furrow, and two inches deep at the bottom, they are filled with bushes and sedge, and seem to answer extremely well, the labour and materials for this work cost 2½*d.* per rod.

At Stow cum Quy. "Some hollow draining has been done, and has hitherto answered extremely well. The lands skirting upon the fens, are a dark-coloured close clay, upon which the underdrains were laid off, one pole apart, eighteen inches deep, and one inch and a half wide at bottom, part of these drains were filled with stones, the whole cost of which was 4*d.* per rod, the other part filled with a straw rope, the whole cost of which is 1¼*d.* per rod. At this time they both draw and work well, the lands thus hollow drained, are now richly worth a guinea, which, previous to this improvement were not worth 8*s.* per acre. Much more of this underdraining would be performed were it not for the wretched state of the general drainage of the low lands, which absolutely forbids further attempts."

At Steeple-Morden. "Mr. Stirtland, one of Lord Hardwick's tenants, has drained 200 acres, some with straw, some with the turf reversed, and no other filling, the whole has answered greatly, and is much to his credit." A. Young, Annals, v. 42, p. 492.

At Carlton, Rev. Mr. Lane, has benefited old rough pastures much by hollow draining; he draws his drains eight yards asunder.

At Coton, Mr. Casborne placed the top spit inverted upon the drain made by draining spade, stampt it down; it has been done seven years, and stood well; he put nothing in.

I found a few persons asserting that hollow draining of uplands is no improvement, that it had been tried, (in the parish and neighbourhood of Waterbeach), and no benefit derived; others confident that surface-draining is preferable; but if I may judge from the effects I saw of the latter, much cannot be said in its favour. Mr. Treslove, of Trumpington, is completely at home at hollow draining, and has wrought great improvement by it, on his own farm. He laughs at the idea of any wet land not being benefited by it, and engages (it is part of his profession) to drain effectually any land upon which he may be employed.

At Madinglay. Sir Charles Cotton has used the mole-plough with success on pasture: draws the drains at about a rod distance; each drain goes into an open ditch; depth of drain about a foot only; they have been done seven or eight years, and are now perfect, and work well; have made the pasture perfectly dry; twelve and fourteen horses did fifteen acres a day; attendance one man to hold the plough, five men to attend horses, &c. the expense therefore in *labour*, may be estimated at 3*s*. 1*d*. per acre, thus;

	£.	*s*.	*d*.	
6 Men at 2*s*.	0	12	0	2*l*. 7*s*. on fifteen acres, viz. 3*s*. 1*d*. per acre.
14 Horses at 2*s*. 6*d*.	1	15	0	

I never heard of so much per day being done by this plough; its going so fleet and the land lying remarkably convenient, account for it in some measure. This plough is now worked by Mr. Lambert, of Risington Wick, near Stow on the Wolds, Gloucestershire, at eighteen to twenty-four inches deep, by one horse only, having a power equal to twenty horses. Expenses 1½*d*. per rod, Mr. L. finding assistance wanted, and his own horse; he has now forty of his ploughs out in different counties, and Mr. A. Young, who has seen one work, speaks highly of it in his Annals, v. 42, p. 413. Although the expense of working this plough by horses, is so cheap, it has been discontinued where tried, owing to the hazard of injury to the horses, from their stamping on each other, and the greatness of the weight drawn by some of them, and which cannot be prevented.

SECT. III.—EMBANKING.

THIS measure, when applied to the fens, is in fact only a part of the process of draining them. On this subject Mr. Smith, of Chatteris, has made the following valuable communication to the Board, and I found his plan becoming general and highly approved. "I find from the public papers that the premiums offered by the Board of Agriculture, include draining low lands; and indeed if stagnant water is not well drained off such lands, no improvement of any value for either corn or grass can ever be adopted on any fens or low lands. But previously to my describing a valuable and improved mode of banking, I will concisely observe that the great level of the Fens is divided into three large levels, and that each of these levels is subdivided into numerous districts by banks; but as these banks are made of fen-moor, and other light materials, whenever the rivers are swelled with water, or any one district is deluged either by rain, a breach of banks, or any other cause, the waters speedily pass through these bright, moory, porous banks, and drown all the circumjacent districts. The fens have sometimes sustained 20,000*l.* or 30,000*l.* damage by a breach of banks; but these accidents seldom happen in the same district twice in twenty years; the water, however, soaks through all fen banks every year in every district; and when the water-mills have lifted the waters up out of the fens into the rivers in a windy day, a great part of the water soaks back through the porous banks in the night upon the same land again. This land that soaks through the bank, drowns the wheat in the winter, washes the manure into the dykes, destroys the best natural and artificial grasses, and prevents the fens from being sown till too late in the season. This stagnant water lying on the surface, causes also fen agues, &c. thus the waters that have soaked through the porous fen banks have done the fertile fens more real injury than all the other floods that have ever come upon them. I have been much concerned in fen banking from my youth, and though I now farm upon a large scale, yet I am still much employed in superintending fen banking, and draining low lands; not only in the fens, but also in some highland counties, at a considerable distance. I had some time back devised the plan which I now find to answer so well, but found it extremely difficult to prevail with any gentleman, who possessed a proper district, to give it a fair trial; however, this last autumn I prevailed with a gentleman in the parish where I reside to try the following plan, which proves equal to my most sanguine expectations.

"*Plan of improved banking.*"

"I first cut a gutter eighteen inches wide, through the old bank down to the clay, (the fen substratum being generally clay) the gutter is made near the centre, but a little on the land side of the centre of the old bank. The gutter is afterwards filled up in a very solid manner with tempered clay, and to make the clay resist the water, a man in boots always treads the clay as the gutter is filled up. As the fen moor lies on a clay, the whole expense of this cheap, improved, and durable mode of water-proof banking, costs in the fens only sixpence per yard. This plan was tried last summer on a convenient farm, and a hundred acres of wheat were sown on the land. The wheat and grass lands on this farm are now all dry, whilst the fens around are covered with water. This practice answers so well on this farm, that all the farmers in this parish are improving their banks in the same manner, and some have begun in adjacent parishes. If the plan be noticed by the Honourable Board, and published, it would soon spread through the fens, and other low lands, and produce inconceivable advantage to agriculture in many parts of the British empire."

Mr. Vancouver makes the following observations on embankments for enclosinglands left by the sea; his observations arose from considering the land likely to be reclaimed, should the Eau-brink cut take place. "We uniformly find a certain point of elevation, to which the sea raises its sands before they begin to assume the appearance of salt-marsh.

Here the first dawning of vegetation is samphire, and a species of grass which partakes a good deal of the same nature, and here the more loamy and divisible part of the sea sediment is deposited, which gives a consistence and strength to the surface, which the larger and more gravitating particles of sea sand below are incapable of affording; and in proportion as this matter is exhausted, and deprived of its virtues by repeated crops, so we approach to an hungry silt, and the permanent value of the embankment is lessened. There are other points, and of the first consequence to be attended to in undertakings of this nature, particularly not to be too impatient or too greedy in the embankment proposed. If the sea has not raised the salt marsh to its fruitful level, all expectation of benefit is vain, the soil being immature and not ripened for enclosure, and if again with a view of grasping a great extent of salt marsh, the bank or sea wall be pushed farther outwards than where there is a firm and secure foundation for it to stand upon, the bank will blow up, and in both great losses and disappointments will ensue. The enclosed marshes on the sea side of the old Roman embankment, in Tid St. Giles, are valued at 8*s.* per acre, the new embankment on the opposite and east-side of Kinderley's cut, in the same parish, were greedily sought for, immediately after the bank was raised, at 30*s.* per acre, which difference can only be accounted for from the adventurers in the former instance having been too early in that "inlake," or from the improper treatment it has since received."

SECT.

SECT. IV.—PARING AND BURNING.

So great is the majority in favour of this practice in the Fens, and such is the opinion of many on it, that they consider it the "*sine qua non*" of the husbandry of that district; the late Duke of Bedford ascertained this point to absolute demonstration at Thorney; Mr. A. Young, thus writes on this subject. "In the year 1797, some experiments were made by the duke's orders, to prove whether burning was really necessary. It was imagined that deep ploughing would do better, but the success was so very bad as to ascertain the point most satisfactorily; the ill effect of the trial is yet seen, and will be till the soil has been in grass and burnt. There is a crop of oats now on Mr. Wing's farm, which succeeded cole on deep ploughing; and while all the surrounding crops after burning are very great, this is a beggarly one, full of weeds, except on one land which was burnt, though very late; this land is good, but inferior to the crops in the common management. A more satisfactory single trial could be scarcely wished for. Another person in 1800 tried oats without a previous burning, the crop was destroyed by the wire worm.* When is conviction to be universal on this question? It has been ascertained again and again, till doubt is folly."

Mr. Wedge, of Westley Bottom, says "burning beats the mucking cart." He thus writes to the Board of Agriculture. "I shall mention the treatment of a very poor piece of heath-land which I wished to lay down in sainfoin as soon as possible. I pared and burned it, sowed it with cole-seed, which I let stand for a crop, with a view to mellow the land and destroy the turf as much as possible. As soon as the crop was off I made it very fine, by ploughing and harrowing it very well, and as soon as I could procure new sainfoin seed, I sowed it with rye. I ploughed about half the seed in, and harrowed in the other half, five pecks of rye and four bushels of sainfoin. This happened to be in the first week in August. I had a very good crop of rye, and an excellent plant of sainfoin; I let the stubble remain upon it all winter, which sheltered it so much that I turned my cows out upon it in the month of March, and it was an excellent pasture all the last summer. I did not feed it down close, and it now looks extremely well. I cannot finish this account without mentioning an experiment that I made on this piece of land, when I began to pare for burning. I ploughed up an acre in the middle of the piece, and set it with early dung pease, which I got off in time to sow with cole-seed with the other, and I manured it with twelve loads of muck. The result has been that the burnt part has been twice as good in every crop, and has now greatly the advantage in appearance." (Com. v. 4, p. 91). Mr. Wedge gives also the following valuable information on this subject to the Board of Agriculture. The greatest part of my land, is poor heath on a chalk bottom, the soil white from three to six inches deep, and in many places near the tops of the hills the chalkstones are mixed with the little soil there is, quite to the surface, which although it is of a better colour, yet is quite bare, and produces but very little herbage. In other places the soil is deeper, and rather of a red sandy nature; this produces hawthorn bushes, furze, &c. and in some places a little fern; this land is much better than the other, both in its natural state, and when it is reduced into tillage. I had always an idea, that paring and burning was by no means injurious to land when properly managed; but never to this day having seen one course of tillage practised by others that I thought a proper one, and so much having been written and said against it, I determined to act cautiously, as I had a good deal of this sort of land to reduce into tillage, and bring into a regular system of farming with other old tilled lands of the same description worn out, and not easily to be recovered without great exertion. Indeed nothing can be more injurious than to take after burning, three, four, or five crops in succession from poor, weak, or even from good land, which has been and still is the practice. I began first with the best land before described, which I ploughed, and with a heavy roller I rolled it down very close, and some part I set with pease, and the other part with oats, after which crop I turned the furrows back without breaking them, run a drill over it, and sowed it with wheat. This answered very well, but best on the pea-land. I then fallowed it for turnips, and I found and still find that turnips will not do very well in this course without muck. With the barley crop, about a peck of trefoil, three lbs. of red clover, and a peck of rye-grass were sown, and the land laid down for two years. When this piece was sown with wheat, I burnt a slip of it that I had left on purpose, and sowed it with wheat at the same time with the other. On this land the wheat was better than on the other, and the turnips better without muck; the barley and the seeds were also better. This encouraged me to go on, and I have found it right; it is much the practice to sow this sort of burnt land with turnips and then with barley, and this is generally followed with two or three crops more before it is laid down. It certainly ought to be laid down with the barley crop, and if it is good land taken up merely for the purpose of improvement to get it down again as soon as possible, the course will certainly succeed; but at the present moment this ought not to be done, because a certain crop of wheat will be lost. Nor do I think it either so beneficial for the land, or so profitable to the farmer, to take turnips first. These require the land to be in good tilth, which is seldom the case with one ploughing, and this is one reason why they so often fail; another reason is, that the land is generally ploughed as soon as the ashes are spread, whereby the ashes are all laid at the bottom of the furrow, which generally is about four inches deep, without being mixed with it; and being washed into the chalk with the first shower, a great part of the goodness is thereby lost. Of this fact I have had sufficient proof; all the middle parts of the summer of 1799, were extremely unfavourable for burning. I had when the wet season set in about ten acres burnt, the ashes were spread, lay all summer, and were washed in by the rain till the land was nearly grassed over. After the rains were passed, I burned some more; and the ashes were ploughed in immediately before sowing; the wheat crop from this land was not so good as the other by more than four bushels an acre. But, to return: if a crop of turnips should be obtained, you have such part of the manure from the ashes as is not lost, and the manure from the turnips for one crop of barley. Such lands as are sown with wheat and turnips, must either have muck or the fold, or both, to produce the crops, which cannot be the case. On the contrary, if wheat is sown the first crop, the ashes make it certain, and turnips are much more certain after the wheat than they are at first. By this means both the wheat crop and the barley crop are manured for without either muck or fold (except folding off the turnips) which is bestowed on other lands, and is pushing improvement further than it can be done by any other means, when manure is not to be purchased. The course that I have pointed out, will more plainly appear by the following statement; 1800, burnt, wheat; 1801, turnips; 1802, barley; 1803, seeds: 1804, half seeds, half pease; 1805, wheat after seeds and pease: 1806, turnips manured; 1807, barley; 1808, seeds; 1809, half pease, half seeds. By this course half the second year seeds will be sown with pease or tares alternately; the wheat crops will always take the fold, and the turnip land the muck, which, generally speaking, will always secure on white* land a tolerable crop of turnips; the fold will not produce the same effect. After this statement it requires but little to be said in order to prove the great advantage of burning this sort of land. The seventh year after burning, is the first time that muck is at all required, as the land is in no one part of this process in a state of impoverishment." (Com. v. 4, p. 98.)

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* I must here remark that I was assured by many in the county, that burning will not destroy the wire-worm.

Mr. Hustler (Mr. Wedge's neighbour), "is a determined enemy to burning upon any poor, thin soil; fen soils, he thinks, cannot be managed without it, but for poor heaths he is utterly against it. Seven years ago he burnt five acres of heath for turnips, after that barley, then oats, then ray-grass and trefoil, rested four years. Another five acres ploughed without burning, and cultivated in the same way. Last year, he burnt the whole ten acres for turnips, the five acres burnt twice gave very moderate turnips, the five burnt but once, a very good crop. Now under barley, and full two quarters of an acre difference;

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* Chalky land.

that twice burnt, is so much less than the other." (A. Y. Annals, v. 43, p. 201).

Mr. Wedd, of Trumpington, approves burning.

Mr. Harvey, of Wimpole, proved its superiority by absolute experiment. The following gentlemen are also friends to this system.

At Wilbraham, Rev. Mr. Butts.

At Chippenham, Mr. Shepherd and Mr. Causton.

At Soham, Mr. Shearing.

At Whittlesea, Mr. Ground.

At March, Mr. Waudby.

At Elm, Messrs. Edes and Nichols.

At Downham, Mr. Saffery.

Mr. A. Young collected the following from them some years back.

Mr. Butts. "Where the land was burnt, a very fine crop (barley) ten or twelve Co. an acre, in parts more; where not burnt, the crop is good for nothing, two or three Co. an acre. Mr. Butts is clear the land will not recover the want of burning these seven years to come, if he does not richly manure these parts, and questions if then they will equal the rest. Another part of this field was sown with wheat, without burning, produce nothing; then oats, produce nothing; now under barley, and that miserable. Adjoining is a piece that was burnt for wheat. which was good, and now there is great barley on it. N.B. Mr. B.'s soil is blackish, on a yellowish marl, not fen."

Mr. Shepherd (Chippenham) and Mr. Causton, "are decidedly of opinion that fen land cannot be cultivated to profit, without this operation, and the former has had many proofs of its superiority over any other system."

Mr. Shearing is of the same opinion, and thinks that "it does not lessen the staple of the soil: so thinks Mr. Ground, of Whittlesea; nay the latter says, that it *deepens* the soil as he has proved."

Messrs. Edes and Nichols, "are well persuaded from experience, that the land is not reduced by burning, but on the contrary much improved."

Mr. Saffery, is for "burning fen-land once to bring it into cultivation, but thinks the repetitions usual, both unnecessary and hurtful in lowering the staple of the soil."

Mr. Golborne, of Ely, "is clearly of opinion that this operation lowers the staple of fen land. Mr. Gardener, of Chatteris thinks the same, but allows his tenants to do it, thinking it really necessary."

Mr. Custance, surveyor, of Cambridge, "objects to the practice on highland, because the staple is too thin, but thinks it necessary on fen." (A. Y. Annals, v. 43).

Mr. Francis, of Childersley, thinks this system preferable to any other for bringing into tillage old, rough, upland pastures; whether it be intended to return them to pasture, or to keep them under the plough; he makes his heaps about one-third of a tumbril load, spreads the ashes, and also ploughs them in immediately after they are made.

Mr. Vancouver on this subject says, p. 201. "This practice is admissible to a certain extent upon land composed entirely of vegetable matter, where the water is at command, and where lowering the surface is not likely to be attended with material inconvenience. Paring and burning is here the only effectual means of quickly bringing land of this description, into a profitable state of cultivation. In such land, wherever there is a considerable depth of vegetable matter after a few years rest, the surface becomes uneven, resembling a field covered with innumerable ant-hills, and the tops of these inequalities, producing little herbage, and that of an inferior quality, are only to be improved by a judicious application of the plough, and burning about one-third part of the thinnest of the flag, that can possibly be spared. Even here this practice ought only to be permitted under certain restrictions and performed with great care; but to extend the same to the thinly stapled highlands of the county, thereby dissipating the vegetable mould; and leaving a surface of cold, sour clay, harsh gravel, or other inert matter, is so highly destructive to the county where it prevails, that in the King's and Queen's, and in other counties in Ireland, where it prevails on thin high lands, extensive and naturally fruitful tracts have been reduced to the lowest and most exhausted state of barrenness and poverty; and as the like effects must on a certainty, under similar circumstances, follow the same practice in this kingdom, it is not easy to comprehend the reasoning of those persons whose judgment leads to the general recommendation of so pernicious a system."

At Cheveley, Mr. V. observes; "The destructive practice of burning these highland pastures has unfortunately been adopted in this neighbourhood, and its consequences confirmed the dislike which landlords generally have to the breaking up of old pasture ground." *Observation*:—I did not hear of these consequences but found the farmers friendly to the measure. At Shudy Camps, Mr. V. says, "a striking instance of the ill effects of burning land of a fair staple, is seen in this parish; the whole field is now ruined completely, and is reduced to the state of an absolute caput mortuum." *Observation*:—I was told that cropping corn, corn, corn, without end, and that great products followed the burning here. Mr. Stone, of Leverington, gave his opinion on this subject to Mr. V. "On the fen-lands burning is general. The toughness of the fen-sward is such that it will not fall to decay, nor be got in pieces unless burnt. Cole-seed on fen-land will not feed sheep, unless the land producing it is burnt to prepare it for the cole-seed. An excess of this practice often consumes a great deal of the soil, and when the land is laid down a barrenness where this has taken place is very apparent. Goose grass (or clivers) is the general symptom of this impoverishment. Breast-ploughing is certainly the best method; it may be done thinner, and more uniformly than by the plough drawn by horses, though the latter is the practice of this country. And indeed I do not think the damage done by burning, arises from the burning of the sward, or the quantity pared off, so that it exceeds not one inch and a half or two inches, but from the fire getting hold of the land, from allowing the heaps to lie unspread too long, and not watching the fire carefully, and putting it out immediately after spreading, before it gets such hold of the land as to make it difficult to be extinguished; the fire then hits, as it is called, and this is very prejudicial. Mr. Scott, of Chatteris, is a friend to this system, on lands which cannot be otherwise brought into tilth, viz. on lands having a sour sward that consists chiefly of reeds and rushes, and other aquatic rubbish, but he says to plough or burn lands every five or seven years, as is now almost a general custom in the fens, is in his judgment almost as barbarous and bad husbandry as can possibly be practised. It never fails when repeated often, to reduce the land to a state of great barrenness. It never fails (even when carefully done) to lower the surface. Many lands are reduced to a third part of their value by repeated burnings. Such are the opinions of individuals in Cambridgeshire on this subject, and the arguments here advanced against the measure in question have been answered again and again, proving that the evils stated have not arisen from the burning when properly done, but from the succeeding treatment of the land, and particularly from an unmerciful and injudicious cropping. The method in the county of performing the burning, &c. is fully related by Mr. Scott, of Chatteris, and may be seen in the Chapter on Cropping.

SECT. V.—IRRIGATION.

COLONEL Adeane, of Babraham, has a large tract of meadows, which have been irrigated from the time of Queen Elizabeth. Of these Mr. A. Young thus writes: "the only watered meadows of any consequence on this side of the kingdom, are those I believe at Babraham, in Cambridgeshire, belonging to Thomas Adeane, Esq.; their history is remarkable. Pallavicino, who was collector of Peter's pence in England, at the death of Queen Mary, having 30,000*l.* or 40,000*l.* in his hands, had the art to turn protestant on the accession of Queen Elizabeth, and appropriated the money to his own use; he bought with it the estate at Babraham, and other lands near Bournbridge; and procuring a grant from the crown, of the river which passes through them, was enabled legally to build a sluice across it, and throw as much of the water as was necessary into a new canal of irrigation, which he dug to receive it in the method so well known, and commonly practised in Italy long before that period. In the first week of April I examined the works. The river of which this good use is made, passes from Linton to Abington, then by Bournbridge and Babraham, and falls into the Cam at Shelford. No similar use has been made of its waters either above Babraham or below it, though the effect has been seen in this improvement during the long course of two hundred and forty years, which is a remarkable instance of stupidity; the Granta is another stream which runs almost parallel with that of Bournbridge, and which passes by Audley End and Chesterford. I do not know if any irrigation is carried on by means of it, but I take it for granted there is none. The sluice made across the river by Pallavicino is about a quarter of a mile above Bournbridge; it is well executed, but in want of repairs; inscriptions on the stone work record to what height, by the original grant, there is a power of raising the water; the deviation is of a considerable body, a canal that carries a stream six or seven feet broad, by three deep; it is thrown over a meadow immediately behind Mr. Phipps's inn, and in his occupation, and the range watered extends from thence through Babraham, to the amount of about three hundred acres. Since the rivers run, as rivers generally do, in the lowest part of the vale, it gives an opportunity of carrying the water equally on either side. Pallavicino accordingly erected two sluices for raising the water on both sides; one as I have mentioned above Bournbridge for the lands on the right of the river, and another about a quarter of a mile below the inn, for throwing the stream over those on the left. The canals and the sluices are all well designed, and are the work of a man evidently well acquainted with the practice; but in taking the water from them for spreading it by small channels over the meadows, there does not seem to be the least intelligence or knowledge of the husbandry of watering. No other art is exerted, but that merely of opening in the bank of the river small cuts for letting the water flow on to the meadows always laterally, and never loni tudinally, so necessary in works of this kind. The water then finds its own distribution, and so irregularly, that many parts receive too much, and others none at all. From the traces left of small channels in different parts of the meadows, I suspect that the ancient distribution formed under Pallavicino is lost, and that we see nothing at present but the miserable patch-work of workmen ignorant of the business. In the regulation of the meadows by lease, and in the rules of watering, circumstances are found not easy to understand. The irrigation begins on Easter Monday, and never sooner than two weeks before; an appointed irrigator goes round the whole range of meadows, twice in seven weeks, giving every tenant his share. There are two waterings, each of three weeks; and after seven are expired, none whatever. The tenants are also excluded by lease from mowing more than once; yet such is the immense benefit of the practice, that though the irrigation is so ill understood and executed, and notwithstanding the absurd regulations of the leases, these meadows would let more readily at 30*s.* an acre with the water, than they would at 10*s.* without it. I cannot well conceive why, with plenty of water, that irrigation which ought to last almost through the year, is restrained to seven weeks, or why in a kingdom where so many watered meadows are successively mown two, three, and even four times, these should be cut but once. The stream runs through Abington above a mile, it comes to Bournbridge but no irrigating. What a loss to individuals and the public, that such valuable opportunities should be so utterly neglected." (Annals, v. 16, p. 177).

I viewed these meadows, and found the irrigation still carrying on, but the benefit much lessened by the right of scouring out certain places being litigated. The landlord covenants to irrigate in a specified degree, and when he cannot do it, allows his tenant 30*s.* per acre: this shews stronger than argument, the value of the operation; notwithstanding, however, it is so great, Mr. Darnton (a tenant) says occasional mucking is also necessary. Mr. W. Smith, in his "Observations on the Utility, Form, and management of Water Meadows, &c. &c." speaking of the Babraham meadows, says (p. 116, &c.) "I went purposely to see them. The feeder crosses the turnpike road from Newmarket to London at the smallest arch of the two, by Bournbridge. The water is directed from its original channel in the grounds belonging to J. Mortlock, Esq. and continued for two miles below, through the village of Babraham. The principal feeder, which follows the level of the ground in a very winding form, may be said with the hatches to constitute all the works, for nothing else can be now discovered by any one unacquainted with the construction of water meads. The various grasses and weeds in blossom, and in different stages of growth, and of various shades of green, just enable me to discover that very small catch drains had at some time been made, but it appears doubtful if they were ever numerous or capacious enough or properly disposed; most of them do not appear to be of any service to the meadows. The above indications now clearly prove that the water does an infinite deal of good on some parts, and injury, for want of proper form, on others. The good parts are small indeed, but sufficient to prove the practicability of making all the other equally abundant, besides the addition of an extraordinary crop of good feed in the spring, which by the present rule of putting on the water at Easter is certainly lost. I was informed that the occupiers were afraid of rotting their sheep, and they are therefore contented with the imperfect proceedings which give them a tolerable crop of hay. These circumstances, and the form of the works seem to prove that they were not designed by any person from Wiltshire, and that the possessors are totally unacquainted with the management and utility of water meadows in that county."

Mr. Scott, of Chatteris, recommends irrigation in the *fens*. Mr. A. Young says, " Mr. Scott, of Chatteris in Cambridgeshire, is of opinion, that there might be very great improvements made by this practice in the fens, to which they are exceedingly well adapted. He thinks this the great object of all, and he partly founds this observation on the fact which he has often witnessed in seventeen years residence, that a breach of banks, wherever it happens, is attended, from the deposition of the muddy sediment, with a very great improvement, however ruinous at the time. The soak of the bank is quite a different thing, for the water comes strained of its rich qualities and is left too long; but under a command at right seasons, the effect would be exceedingly great, and improve the land much." (Annals, v. 40, p. 464). Mr. A Young, relates the following, which appears to prove Mr. Scott's ideas on this subject correct.

" A gentleman near Denver sluice, more than twenty years ago, observing the extreme muddiness of the water of the Ouse, let it in upon his land which he had slightly banked for that purpose, and used his mill for throwing it back, clear after it had deposited its silt; by this method he raised his soil above two feet in no long time. The advantage was very great, but not followed by any other person." (Annals, v. 44, p. 285).

SECT.

SECT. VI.—MANURING.

THE common process with farm-yard muck, is to carry it to a hill and turn it over, or to turn it over in the yard, and then carry it on the land ; very few composts are made. Some marling has been done, but to no great extent. Mr. Godfrey, of Kennett, carried that which he found on his farm, and thinks it did not answer the purpose ; his soil, " a light gravel, dry and chalky, under which is a very fair marl." Pigeons dung is used as a top-dressing to wheat, twenty bushels per acre at 8*d.* per bushel. The following manures are also used : soot, twenty bushels per acre at 8*d.* rabbit's down and their trimmings, thirty bushels per acre, at 7½*d.* ; oil-dust, at about four Co. per acre, at about 10*s.* 6*d.* per Co. 1000 cakes will produce 22 Co. of dust, which cost 10*s.* 6*d.* per Co. when cakes are eleven guineas per 1000. Malt-chives, forty bushels per acre, at 9*d.* a fish called stickle-backs, twenty bushels per acre at 7½*d.** N.B. Soot is supposed to prevent the progress of the wire-worm in wheat.

Professor Harwood, of Bartlow, uses cinder-dust thirty bushels per acre ; cost at Cam. (exclusive of carriage eleven miles) 2*d.* per bushel; thinks it equal to folding, sows it on fallows immediately before wheat sowing. Mr. Wedge, of Westley Bottom, is an advocate for long-muck. Mr. Cole, of Quy, Rev. Mr. Brown, of Connington, carry muck and mould on separately. Mr. Burleigh, of Barnwell, waters his pastures with the draining of his yard, and finds great benefit. One-tenth of the cost of purchased manures is allowed the farmer by many tithe-gatherers. Rev. Mr. Lane, of Carlton, approves potash on pastures after draining them; he thinks gathering stones prejudicial, and will not suffer it even for roads. Mr. Wedd, of Trumpington, thinks no manures except dung pay for purchase and carriage. At Wisbech price of muck has risen within a few years, from nothing to 5*s.* per load *carried on.* At Chatteris, and indeed in many parishes bordering on the fens, there is such abundance of muck that the farmers know not what to do with it. At Babraham, Mr. Darnton has found composts (muck and earth) preferable to muck alone; he has tried lime, and it did not answer his purpose, he found it impoverished his lands: a light gentle soil, on a gravel. At Harston, Rev. Mr. Leworthy makes composts; has tried lime thus: to every tumbril-load of moulds while laying on a heap in the field, he puts two bushels of unslaked lime, covers the lime with the moulds, lets them lie three or four days, then spreads them; cost 5*l.* to 6*l.* per acre, improves the soil; insures a crop of turnips. At Whittlesea, Mr. Boyce mixes the sweepings of the streets, (which are collected and delivered to him gratis) with farm-yard muck, and finds the benefit great. In the neighbourhood of Cambridge the farmers purchase the sweepings of the streets, &c. of that town, of the scavenger, at 2*s.* 6*d.* per tumbril-load. The corporation of Cambridge do not now give more than one-third of the sum they gave only a few years since for sweeping the streets, &c. which shews the increased value of manures. At Childersley, Mr. Francis prefers composts to raw muck. At Leverington, Mr. Stone says, " pigeon dung and soot are sometimes sown upon marsh-land and high land fallows, whereon turnips or cole-seed are sown, and sometimes soot upon wheat at spring, to embitter the surface and upper stratum of the land, to make the wire-worms eating the wheat retreat from it; and when this has been used it has always succeeded, there having been a vast yield after it; when if it had not been tried it has been believed the crop would have been entirely destroyed; twenty bushels per acre is the quantity generally used. Wire-worms are the greatest annoyance we experience in our husbandry, they are yellow in their colour, and resemble the centipede, from the number of their feet, but not quite so long in their bodies; the heavy and light soils are equally subject to them. No particular attention is paid to the making of dung hills, nor do I see that our country furnishes any thing likely to give rise to the practice. To clay our light silty lands would be the first and greatest improvement, and this I fear must ever be retarded by the badness of the roads, and the dearness and scarcity of labourers; the manure in our straw-yards we are very careful of, and think it much improved by caking our beasts upon it with linseed cakes." In the neighbourhood of Cambridge, and in most upland parishes, cottagers' muck is sold at 2*s.* 6*d.* per cart load. Rubbish of buildings at 6*d.* per load. In the fens the chief manure is the ashes from burning, these are almost generally spread and ploughed in immediately after burning. The ashes from turf are esteemed of so little value, that those having them, can by favour only get them taken away; they are carried to the nearest arable upland. At Fenny Ditton about forty loads per acre of clay have been carried on to fen-land, and wrought great improvement.

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* These are used after having been mixed, a layer of earth, and a layer of fish and turned over, and when decayed, carried on the lands. If carried on before this process, the vermin would take them off.

CHAP. XIII.

LIVE-STOCK.

SECT. I.—COWS.

THESE are mostly the horned breed of the county, and are called by its name; there are, however, cows of various kinds in every parish. Mr. Vancouver has attempted to specify them, viz. the Suffolk polled, the Craven, Short horned Yorkshire, Derby, Welsh, Leicester, Fifeshire, Gloucester-brown, and the common Cambridgeshire." An opinion prevails at Islesham that the Suffolk cow will not thrive in the fens. Mr. Fuller (one of the farmers) has had, he conceives, proof of it, by having purchased some from Suffolk, and having kept them with his other cows two years, during which they gradually declined; he sold them to the person of whom he bought them, and they were soon restored to their original health, &c. &c. I did not find the rot in cows, and their frequency of slipping calf existing to the degree mentioned by Mr. Vancouver. The butchers will give more for a Cambridgeshire calf than for a Suffolk one, fancying the former whiter veal. Even the calves of one parish in the county, are preferred to those of another in it. Calves for rearing are weaned at four days old, and kept on milk, and afterwards on hay, turnips, potatoes, &c. &c.

from four to nine months, according to the time they "fall." Rev. Mr. Leworthy, of Harston, lets his calves, which he *fattens*, *drink* the milk ten weeks, and is paid about 10*s*. 6*d*. per week, selling them at five guineas.

Mr. Darnton, of Babraham, keeps the South Wales cow, and thinks they produce less milk than the Suffolk, but of so superior a quality that it yields more cream; this was acknowledged by his dairy-woman, a Suffolk one. He thinks cows have paid him better than grazing. Lord Hardwicke has a fine and beautiful dairy of short-horned cows, fed in winter on hay and potatoes; they appeared in too high condition for profit, all the calves are reared, keeping them three or four months before turning out. At Cottenham (where the famous cheese called by its name are made), I inquired whether the excellency of their cheese was to be ascribed to any particular process in making them, or to what other cause; and the general opinion seemed to be that it was owing to the nature of their grass. The dairy-women of Cambridgeshire are not so communicative on the score of their art, as their husbands are in theirs; none of them *know* how much butter or cheese they made, or milk their cows gave. Whether Mr. Vancouver got in Cambridgeshire, the following directions for preparing the runnet, I know not; but as I am informed they are good, I insert them. "In preparing the rennet for the purpose of making cheese, which is here brought to very great perfection, nothing more is necessary than salting down the bags, in which state they remain for twelve months; about six of these bags will make two gallons of brine, strong enough to suspend a new laid egg, which being put into a jar, is fit for use in about a month, when a gill of it to every four gallons of new milk, or warmed as from the cow is sufficient; the milk should all be of the same age or meal, and much depends upon breaking the curd with the hands, for unless that is done very completely, the whey cannot be expressed, any of which remaining in the cheese, communicates a harsh fiery taste, produces the blue mould, and leaves the cheese full of holes, or cells like a honey-comb. In short the dairy-maid's attention should never be called off, or diverted from the very essential part of the process of breaking the curd."

The farmers whose wives attend the dairy, say nothing pays better than cows; but all agree they are unprofitable unless that is the case. The butter is sold rolled up in pieces of a yard long, and about two inches in circumference, this is done for the conveniency of colleges, where it is cut into pieces called "parts," and so sent to table; its quality is no where excelled. Suckling of calves, and making of butter is the chief cow system; there is not much cheese made, except the noted ones of Soham and Cottenham. The suckling season is from Michaelmas to Lady-day. It requires on an average two cows to fatten a calf. The profit of cows is said to be much lessened by the increased price of cooperage, firing, &c. and fewer are kept, owing to the difficulty of getting men to milk, without extra wages. The cows when at a distance from home are milked in the pasture, and the milk brought home by a horse or ass in tubs slung across: women could not do this work, the travelling being (after the least rain), very bad, even when there is no water to go through.

SECT. II.—BULLOCKS.

THESE are of various sorts; the stock of the county, and from Norfolk to Suffolk are the kinds generally reared.

Those bought at an age for grazing, are Galloway, Scots, and other north country breeds, and for the best part of the fens and superior pastures, large beasts; chiefly the short-horned, the Lincolnshire, Yorkshire, Fifeshire, and Irish. The systems with stock are various. Mr. Wedd, on his farm at Soham, rears neat cattle, and sells them lean from grass, for grazing, and thinks it pays better than fattening them; he also sells heifers just before calving, and thinks they and cows pay better than any stock. When the calves fall in autumn, they have milk or oil-cake porridge warm till spring. When they fall in the spring they have milk three or four months, then are turned out. Those which fall in the autumn have hay first and second winter, those falling in spring hay only first winter. Mr. Edes, of Wisbech, buys in at autumn, and returns succeeding autumn from grass; or buys in at spring beasts forward in flesh, and returns them with those bought preceding autumn; he also stall-feeds some, i. e. about one fourth of his stock. Mr. ——— rears his own stock, keeping a large dairy, calves falling at all times of the year. If the cows be not good milkers lets the calves run with them; otherwise gives the calves milk in the house. Sells at all ages, according to markets.

The most prevailing systems are,

1st, Wean at a few days old, keep in house four to nine months on milk, turnips, potatoes, &c. &c. put them to grazing, at three, four, or five years old, generally at three years.

2d, Wean and sell to graziers at age for fattening.

3d, Buy in year olds, and keep them till of age to graze.

4th, Buy at an age for grazing, this is generally done at autumn, and return succeeding autumn, keeping on hay and grass, in winter, and finishing them from grass.

5th, Buy at the spring, and if not forward enough to sell fat in the autumn, finish on corn, or oil-cake.

Estimated returns from these processes.

From 1st, 2d, and 3d. Pay from 4*l.* to 5*l.* per year till put to grazing.

From 4th. Pay for a twelve months fattening 8*l.* to 12*l.*

From 5th. This process is not adopted, of late by *choice*, but is resorted to rather than sell to a certain loss, or when muck cannot be purchased or otherwise raised; formerly, however, corn and oil-cake grazing were almost universal, but the losses have for some years past been so serious, that the rage for it is abating fast. Even with corn very low it will not pay. Mr. Wedd, of Trumpington, has corn grazed frequently, and has declined it, not having found it answer, even when corn is at the lowest; he thinks he has been paid by potatoes and barley-meal, given separately. The expense of oil-cake feeding may be ascertained, when their price is known, it having been found that a large beast will eat six in a day, weighing 2½ lbs. to 3lbs. each, *besides a "little hay and a little corn,"* as the advocates for this system call it. Oil-cakes are now 16*l.* to 17*l.* and 18*l.* per thousand, viz. (if they weigh 3 lbs. each), 1 ton, 3 qrs. 4 lbs. being at 16*l.* per thousand 3¾*d.* each. Mr. Page, of Ely, is out of all patience with corn and oil-cake grazing, says he has suffered greatly by it, intends in future to buy small beasts that may be returned from grass; says that oil cake not only increases in price, but is of considerable worse quality than formerly, so much so that beasts benefit little by them.

Mr. Shepherd, of Chippenham, speaks more favourably of corn grazing; he cleared last year by sixteen beasts

5*l.* each, on turnips, oil-cake, and pea-meal, charging turnips and every other article at market-price.

Colonel Adeane, of Babraham, intends buying in London, on a falling market, and keeping for a rising one, on oil-cake, &c. N.B. Babraham is fifty miles from London.

Mr. Darnton, of Babraham, has grazed beasts on *linseed-oil* and barley-meal, half a pint of oil to one peck of meal daily, and was paid well. The oil varies in price from 5*s.* to 9*s.* per gallon. Beasts put to this keep, Mr. D. observes, should be forward in condition. Notwithstanding this account of oil-cake, grazing is thought preferable to corn grazing, as the beasts on the former fatten much quicker than on the latter.

Rev. Mr. Lane, of Carlton, intends to graze all the year round; in a well littered yard, in summer on tares, sainfoin, &c. cut green; in winter, on turnips and sainfoin hay, cut into chaff.

It has been questioned whether beasts which have been at corn, will do well at grass afterwards. Mr. Cooper, of Ely, who grazes on corn, grains, &c. &c. says he has found they will.

Amongst the numerous graziers of note in the county, Mr. Wing, of Thorney, and Mr. Johnson, of Whittlesea, are conspicuous. The former sold a pair of beasts (twins) in Smithfield, one for 100*l.* and one for 60*l.*; the latter sold there also on the same day, three beasts, at 82*l.*, 84*l.* and 86*l.* each.

SECT.

SECT. III.—SHEEP.

Sorts.

THE most prevalent sort in the fens (where the greatest number in the county is kept) is a cross between the Leicester and Lincoln ; there are, however, many other breeds, viz. Norfolks, West-country, Cambridgeshire, Berkshire, Hertfordshire, South Down, Lincoln, and Leicester. Mr. Tharpe, of Chippenham, has the first South-down flock in the county. Mr. Shepherd (Mr. Tharpe's steward), thinks they are not so subject to diseases, that they rear more lambs, produce more wool, require less keep, and yield a profit on the whole one-third more than Norfolks. Mr. Treslove, of Trumpington, has whole Leicesters, fine and handsome, having just set them ; had nothing to communicate on their merit or demerit, but has no doubt they will gain ground in the county. Rev. Mr. Lane, of Carlton, has tried many sorts, and is going to keep South Downs. Mr. Darnton, of Babraham, prefers the cross between the South Down ram, and Norfolk ewe, to whole South Down, as the former are of more value to the grazier.

Colonel Adeane sold a fine Norfolk flock, to set a South Down one. Mr. Mortlock, of Abington, has fine South Downs.

Mr. Wedd, of Trumpington, formerly kept west country sheep, and upon parting with them has tried every polled breed, and is returning to his old stock, convinced that it is superior to any other. At Madinglay, Sir C. Cotton is parting with his Cambridgeshire, and substituting South Downs. At Childersley, Mr. Francis breeds west country ewe and Leicester ram.

Quantity

Quantity in the county.

Mr. Vancouver says 152,928. I can neither confirm nor disprove this opinion.

Weight per quarter.

South Downs, Mr. Tharp's 1 year old, 12 to 15 lbs.
2 year old, 16 to 20 lbs.
Mr. Mortlock's 3 years old, 16 lbs.

Lincoln and Leicester cross, Mr. Johnson once sold (of his own breeding) four three-shear, which weighed 45, 46½, 48½, and 52 lbs. per quarter, and three others averaged 46 lbs. per quarter. In one day at Smithfield he sold two sheep at 7*l.* each. N.B. All these sheep were grass-fed only. Mr. Edes, of Wisbech, has the same breed, and they usually weigh, shearlings 18 lbs., two shear 26 lbs.

Mr. Vancouver states the weights as under, of three years old.

Norfolks	16 lbs.
West-country	18 lbs.
Cambridgeshire	14 lbs.
Lincoln and Leicester cross	22 to 26 lbs.

Wool.

Mr. Vancouver states (at three years old).

Norfolks	2¼ lbs.
West country	4 lbs.
Cambridgeshire	2¼ lbs.
Lincoln	12 lbs.
Lincoln and Leicester cross	8 to 11 lbs.

Mr. Ede's Lincoln and Leicester cross, tod 3½.
Ditto whole Lincoln, ditto 2.
Ditto whole Leicester, ditto 4.

Folding,

is universally practised, its value variously estimated.

At Horse-Heath, Mr. Sanxter ...... at	40*s*. per acre.
At Islesham	18*s*.
At Barnwell, Mr. Burleigh	26*s*.
At Burwell, Mr. Dunn	25*s*.

At Westley Bottom, Mr. Wedge. "Take away my fold, take away my flock." At Trumpington, Mr. Wedd at 30*s*. per acre, if done well between August and Michaelmas, when he considers it of the most value. At Abington, Mr. Mortlock's bailiff, at 40*s*. per acre.

Systems.

These are not peculiar to the county; they are

1st, Breed and sell lamb, fat from ewe; then fat ewe and sell her, buying in every autumn fresh ewes.

2d, Breed and rear produce, and return it fat at three years old, keeping ewes as long as they are "whole mouthed;" set ewes from own stock.

3d, Buy at one or two years old, and return fat, within the year.

4th, Keep regular folding flock.

The keep under all these systems is, (speaking of the general practice) in fens, during winter and spring, grass and cole-seed; in summer, grass only. In uplands, in winter and spring, turnips and layers; in summer, layers and natural grass. Individuals, however, adopt somewhat different modes.

Mr. Mortlock, of Abington, feeds his flock on hay, morning and evening while they are at turnips; the hay in the racks described before. Mr. Mortlock feeds his layer as well as his turnips, a piece at a time hurdled off.

Rev. G. Jennyns, and Mr. Tharpe, have excellent fold-yards fenced in by *open* pales ; in these yards well littered, they lodge their sheep in bad weather; they conceive a *close fence* would be injurious to the sheep.

Mr. Edes, of Wisbech, breeds and returns fat from grass, at one and two years old. At Wisbech and neighbourhood, sheep are fattened to excess; at Christmas there is an exhibition, by every butcher in Wisbech hoping to shew the fattest. In feeding upland layers with ewes and lambs, the almost general practice is, to let the lambs go before the ewes into fresh feed, through " nooses in the hurdles, going to and from the ewes at pleasure. The lambs are found not to be so liable to be hoven by clover as sheep are. Mr. Philips, of Bournbridge, never breeds his sheep " in and in." Mr. Francis, of Childersley, breeds from west country ewe and Leicester ram, has his lambs fall at Christmas, sells them fat, and puts ewe into flock. Sheep which cannot be wintered at home, are put out to stubbles, and other hard keep in uplands of neighbouring counties, at 6*s*. to 7*s*. per head.

Mr. Waddelow, of Little-Port, feeds his sheep on beans and oats, and thinks they pay well for it. Rev. T. Brown, of Connington, gives whole beans, and recommends the practice.

All fen-farmers remove their sheep frequently into fresh feed ; they say they lose many if they neglect to do it.

Mr. Wing, of Thorney, thinks bullocks and sheep should graze apart ; the general practice is otherwise.

If a sheep pays under any system 20*s*. per year (including wool) the farmer is satisfied.

Stocking.

The following are supposed to require an equal breadth of pasture, five to six sheep, or one beast from forty to fifty stone when fat; Mr. Edes, of Wisbech. Five sheep, or one beast from fifty to sixty stone when fat. Mr. Boyce, of Whittlesea. At Elm, on highland pastures, twenty-two sheep and one steer for five acres, are the stock for summer months, and three sheep for two acres in winter, (Vancouver). *Observation*:—this is equal (calling the beast equal to five sheep), to five sheep and two-fifths summer stock, and one and a half in winter. I found the more general stock to be five to six in the summer, two in the winter.

Disorders.

Mr. Vancouver has ably and fully described the disorders prevalent amongst the sheep in the county. I did not, however, find them existing to the degree, (or any thing like it) which he states; he says,

At Ashley and Silverly are Norfolk-sheep, amongst which a growing disease prevails equally alarming with the rot, (though these sheep-walks are happily free from that calamity) the first appearance of which is indicated by the wool changing to a brown colour; and as the disease advances it drops off at the roots, and leaves the skin quite clean and naked. At this time the animal appears extremely uneasy, constantly rubbing its head against the hurdles and fences, and scratching its back and sides with its horns, starting suddenly, running a few steps, then falling down, where it will remain a short time, and then rise and begin feeding as in perfect health. The skin is perfectly free from eruption, and other appearance of disease, nor are there any traces of the disorder discoverable by examination of the entrails, the body or head of the animal; and as no instance of a cure has occurred in any of the surrounding parishes, and moreover as this disorder is considered to be infectious, the sheep are usually killed on the appearance of the first symptoms, though some have been known to languish under its fatal influence for ten or twelve weeks together."

At Dullingham. " In the summer there prevails amongst the sheep, a garget or gangreen, appearing between the flesh and skin: this disease has hitherto been deemed incurable."

At Kennet. Norfolk sheep are kept, and " are extremely liable to warp or slip their lambs. They are very subject to the garget or red water, the symptoms of which are so indiscernible that in two hours after the animal has appeared in perfect health, it is found dead."

At Tadlow, Trumpington, Drydrayton, Barrington, Eltsley, Croxton, Caxton, Longstow-Bourne, Cottenham, the rot has prevailed to that degree that taking the numbers, said by Mr. V. to have been carried off in one year, I find it is 7,548 out of 11,885. " Another species of rot was noticed, which does not appear to be ascribable to the like cause. This is called by the farmers the blood rot. The liver appears to the eye in these cases to be perfectly sound, and as free from disease, as in the most healthy animal; it is however covered with an extremely thin transparent membrane, as tender as a spider's web, but which the smallest pressure imaginable immediately ruptures, when the whole liver resembles a mass of coagulated blood, without any cohesion whatever, the liver and intestines at this time are free from any appearance of insects, alive or dead; nor was it understood from the farmers that the liver in the state before mentioned, was offensive to the smell; though certain it is, that in its progress, it must have been rendered gradually inert and corrupt as it became disorganised."

At Badlingham. " The sheep are subject to the disease noticed at Ashley, the red water, garget, or gangreen between the flesh and skin of the animal, warping their lambs, and dying "dunt," (as the shepherds term it) that is, dizzy; as a cure for this latter calamity, the shepherd will frequently open the sheep's head, at the insertion of the horns into the scull, with his knife and extract one, two, and sometimes more maggots, larger than those generated in tallow."

At Elm. "The sheep in this parish have been subject to a very extraordinary disease feeding upon newly laid down land; which by the farmers is considered to arise from eating a herb or grass by them called cockspire (cocksfoot) which is said to produce a relaxation of the shoulder; this calamity is most to be apprehended in moist forward seasons." Young neat cattle from one to three years old are also subject to this disease. A cure is generally effected by removing the stock to high land, on the first appearance of the disease.

At Thorney. "The breeding of sheep has in a great measure been relinquished in this parish, on account of a weakness that prevails amongst the lambs; it affects the whole frame of the animal, and seems to be an extension of a disease, similar to that well known in many counties, by the name of the rickets. The rickets however is a disease originating in the animal, whereas this disease appears to have its origin from the nature of the soil or herbage, which the animal when young, feeds upon; it is observed to prevail most generally upon new or lately laid down land, and it is the opinion of many farmers that the rye grass contributes to this effect."

As it is so well known what description of land will inevitably cause the rot, it is not easy to account for sheep being kept on such to a certain and heavy loss. In "flying flocks," viz. sheep bought and sold within the year, the rot is scarcely heard of.

Accidents.

Vast quantities of sheep (the long wooled) are lost in the fens, from being cast on their backs; they are watched solely on this account, as immediate assistance is necessary.

SECT. IV.—HORSES.

THE farmers in this county think themselves unrivalled in cart horses; in the fens they are a source of great profit, they are very large and bony and the greatest number black; long hair, from the knee to the fetlock and trailing on the ground, is reckoned an excellency. Mr. Johnson, of Whittlesea, shines as a breeder of these horses, perhaps as much as any gentleman in the county; he has a cart stallion for which he gave by auction 255 guineas; the colts of this horse have sold off the mare, at 60*l.* and year olds at 100 guineas. Mr. Johnson one year sold twenty two year old cart colts (not the breed of this horse) at 40*l.* each. Mr. Edes, of Wisbech, is also a great breeder of this stock, he sells at two and three years old; average price of late years, two year old, 20*l.* three year old 25*l.*: the present prices of cart-horses and brood-mares, are high beyond belief; 40*l.* to 50*l.* is thought a low price, for a good, strong, common, three or four year old. They are generally sold at two years old: while these prices remain, stock will pay equal to them. Farm-horses are kept at great expense in the upland part of the county, being in the stable all the year at hay, corn, and chaff; very few farmers, comparatively speaking, giving them grass, tares, clover, or any green food. The expense per year, per horse 20*l.* to 30*l.* thus estimated,

	£.	*s.*	*d.*
Oats 1½ bushels per week the year round, viz. 19½ Co. at 12*s.*	11	14	0
Hay one cwt. per week, that is 52 cwt. at 3*s.*	7	16	0
Shoeing	1	1	0
Farrier	0	10	0
Interest on capital, say on 30*l.*	1	10	0
Decrease in value in seven years, supposing the first cost 30*l.* say 15*l.* which is per year say	2	2	0
	24	13	0

There is also a further expense for chaff, which in general consists of cavings of corn, trodden down hard, kept in a heat by watering it; the farmers begin to get a stock at Michaelmas, but don't wish to use it till after barley-sowing; till which time, from Michaelmas use chaff or cut-straw untrodden. A horse consumes about half a fan of chaff per day.* The quantity of oats I have stated, is about the average given; it varies from one to two bushels per week. The hay is under that which many give, I heard of one cwt and a half.

Many farmers, however, do not keep so "high" as here stated. Rev. Mr. Leworthy, of Harston, reckons the expense and decrease in value on a cart-horse, 30*l.* per year. The fen-farmers keep their horses at comparatively no expense. Mr. Wedd thinks it so trifling, that he keeps four to every plough he works, using two horses at a time for half the day, the men going the whole day. The horses here are not shod, except those which go on the road. The expense in the fens per horse per year was stated to me thus,

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* Chaff is very subject to be destroyed by the wevil (or beatle), wormwood branches strewed in the heap will send them away. Mr. Burleigh, of Barnwell.

	£.	s.	d.
From May-day to Michaelmas, say 26 weeks on grass at 2*s.*	2	12	0
From Michaelmas to May-day, say 26 weeks on hay, 1½ cwt. per week, viz. 39 cwt. at 2*s.*	3	18	0
From Michaelmas to May-day, oats seven pecks per week, viz. 11 Co. at 12*s.*	6	12	0
Interest on capital, farrier, decrease in value, as in preceding estimate	4	2	0
	17	4	0

All the expense here stated, from Michaelmas to May-day, is not incurred by every horse, but by the number required for winter use, which is very few.

Quantity kept.

Mr. Mortlock, of Abington, on a light land farm, keeps seven on three hundred and fifty acres.

Mr. Francis, of Childersley, keeps twelve to fourteen on four hundred arable heavy land, and two hundred pasture. Rev: Mr. Leworthy keeps four on one hundred acres arable, heavy land.

Mr. Wedge, of Westley Bottom, thus writes to the Board of Agriculture. (Communications, v. 5, p. 98.)

I think where two horses are sufficient to work a plough, one horse is kept on an average to every twenty acres of ploughed land, and every horse will furnish employment, (exclusive neighbourhood of Leverington, Parsondrove, and Thorney, where two journies a day are not unusual; ploughing from seven to twelve, and from two in the afternoon till night, or when the day will admit of it, till seven in the evening, doing about an acre each journey."

Hours of work.

At plough, generally one journey of seven or eight hours, when they go two journies, (which is in the spring), they are from seven to twelve, and from two to seven, viz. ten hours.

SECT. V.—HOGS.

THESE are as various as the county itself, and the adjacent ones produce; there are many of the Suffolk breed, viz. short, white, and short eared, which are gaining ground. Some of the Cambridgeshire are so large as to fatten to forty stone, fourteen lbs. to the stone, at two years old; twenty to thirty such stones, a common size. Nothing particular in the hog-system in the county. Fattening hogs on barley-meal is supposed to pay when barley is at 10*s.* and pork at 7*s.* per stone, and the lean price in proportion. Rev. Mr. Leworthy, of Harston, has fattened hogs on *steeped* barley, and says he has been paid well. Rev. Mr. Lane, of Carlton, has been a very large corn-grazier of hogs, and has declined the practice, not having found it answer his purpose; neither of these gentlemen could furnish me with the result of any experiment. An intelligent and large farmer observed to me, (and I am inclined to think justly) "that fattening hogs "pays a cottager, or any one who *himself* attends them; as "in that case less is suffered by robbery, less waste is

" made, and they are not kept a moment longer than it is " done to profit. They require, he observed, more attention " than servants will give them; at any rate he said more " economical management than they would exercise." I witnessed at Shelford, a most barbarous and disgraceful way of killing hogs, viz. a man standing in the middle of a stye, and striking them on the head (by an instrument somewhat like a cricket-bat) as they run round the stye; several ineffectual blows were given with no other regret than exposing his want of skill; another man attends to finish the business in the usual way.

SECT. VI.—RABBITS, POULTRY, BEES.

Nothing singular in these. There are no warrens in the county.

SECT. VII.—PIGEONS.

ALMOST every farm has a pigeon-house, and though the quantity sold is in many instances very great, and amounts to a large sum, the most intelligent farmers believe them on the whole injurious, and would not keep them but for their muck, and that they would be necessitated to feed others. They destroy thatch, and oblige the farmer to sow more seed than is necessary for his crop. Many dove-houses produce annually one hundred dozen young pigeons, which sell from 2*s.* 6*d.* to 5*s.* per dozen; the produce however varies much, and in some instances amounts to a trifle.

CHAP.

At Connington, 2*s.* 6*d.* per acre. Mepal, 3
well, 3*s.* to 4*s.* At Chatteris, 2*s.* 6*d.* At E
beer.

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* See Table annexed.

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Communication to the Board of Agriculture.	Price in Winter, 1790. Perweek. s.	d.	Price in Winter, 1804. Perweek s.	d.	Man's ges, 04. week. d.	Second Man's Wages, 1790. Per week. £.	s.	d.	S £	illing Dung, 1804. r load. s.	d.
No. 1	7	0	11	0	—	—					
2	8	0	12	0	0	0	7	6	0	0	4
3	6	0	9	0	0	0	8	0	0	0	3½
4	6	0	9	0	0	0	8	0	0	0	3
5	7	0	9	0	0 per an.	6	0	0 per ann.	8	0	3
6	6	0	10	6	6	0	6	0	0	0	6
7	8	0	9	0	0	0	7	0	0	0	3

The following communic

Places.								
Connington	—	12	0	12	0	—	0	2 +
Mepal	—	9	6	5	0	—	0	2½ +
Upwell	—	12	0	0	0	—	0	4 +
Chatteris	—	9	0	0	0	—	0	1½ +

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CHAP. XIV.

RURAL ECONOMY.

SECT. I.—LABOUR.

THE annexed Communications* on this subject were made to the Board of Agriculture from this county, in 1804. The following is the information I received from individuals at the places noted.

Wages of Shepherds.

	£.	s.	d.	
At Connington	10	10	0	and usual advantages per year.
At Mepal, wages and advantages equal to	35	0	0	
At Upwell, ditto	35	0	0	
At Chatteris, ditto	25	0	0	

Wages of Dairy-Maids.

	£.	s.	d.	
At Connington	5	5	0	per year.
At Mepal, wages and board valued at	25	0	0	
At Upwell, wages	5	5	0	
At Chatteris, ditto	5	0	0	

Mowing-grass.

At Connington, 2*s.* 6*d.* per acre. Mepal, 3*s.* 6*d.* Upwell, 3*s.* to 4*s.* At Chatteris, 2*s.* 6*d.* At Ely, 4*s.* and beer.

Making

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* See Table annexed.

Making grass.

At Connington, by women, 1*s.*, boys and girls, 8*d.* per day. At Mepal per acre, 4*s.* 6*d.* Upwell, 3*s.* At Chatteris, 1*s.* 9*d.*; Women, per day, 1*s.* 2*d.* and 1*s.* 4*d.* Upwell, women, 1*s.* 3*d.* to 1*s.* 9*d.* per day.

Turnip-hoeing.

Twice, 7*s.*; once, 2*s.* 6*d.* to 5*s.* per acre, the art not understood; has cost 20*s.* and upwards, having been done by gardeners, and by them by the day. There are, however, now great quantities of turnips grown, owing to the late enclosures, and there will be no difficulty of getting them hoed at the usual price of the countries growing them.

Chaff-cutting.

A general price 2*d.* per fan, (a fan equal to three heaped bushels). At Upwell, 2¼*d.* per fan. At Chatteris, one-half-penny for a heaped bushel.

Hollow-draining.

Per score rods 3*s.* to 3*s.* 6*d.* and 5*s.* and more.

Washing sheep.

Per score 2*s.* At Chatteris, 1*s.* Mepal, 2*s.* 6*d.* Upwell, 6*s.*

Clipping sheep.

Per score 2*s.* to 3*s.* 6*d.*

Reaping.

At Mepal, oats, 16*s.* per acre; beans 21*s.* At Upwell, oats, 14*s.* to 20*s.* beans, 8*s.* to 16*s.* At Chatteris, oats, 12*s.* At Whittlesea and neighbourhood are many women reapers, who will reap a quarter of an acre per day; the price in fen 12*s.*, in field 9*s*, per acre, more is often given.

Turning over muck.

Per load 1*d.*

Dibbling.

Wheat 10*s.* 6*d.* oats, 8*s.* to 10*s.* at Upwell. At Chatteris, wheat, 10*s.* 6*d.*

Threshing.

Oats, 6*d.* per Co. at Upwell. At Chatteris, 8*s.* per last of 21 Co. (about 4½*d.* per Co.) beans, 9*d.* per Co.

Yard-man.

Per year, wages and value of board, 26*l.*

Wages.

In hay season 2*s.* 6*d.* to 5*s.* per day, and more; year round, summer, 12*s.*, winter 10*s.* 6*d.* per week; in harvest per week 18*s.* to 24*s.*

Mowing.

Beans 4*s.* per acre; barley, 2*s.* 6*d.* to 3*s.* 6*d.*

Weeding.

Wheat 4*s.* per acre.

Hoeing.

Beans 6*s.* per acre.

Fencing.

In fields near fens, 4*s.* for six yards, (including materials).

Thatching.

Per square of 100 feet 4*s.* to 4*s.* 8*d.* with reed; with straw, 3*s.* Reed thatching is done in a masterly way in this county, costs, per square of 100 feet, 1*l.* 1*s.* the reed, 5*s.* the labour. Reed is now four guineas per thousand bunches, which will thatch four square. At Whittlesea, reed thatching is done at 3*s.*·6*d.* per square, the thatcher finding spits and rope; straw-thatching at 4*s.* 2*d.* per square.

Paring and burning.

Per acre 30*s.* to 40*s.* including spreading the ashes.

Ploughing and burning.

Per acre 14*s.* to 15*s.* including spreading the ashes.

Ploughing.

In a few places per acre, 20*d.*; not often done by acre in many parts of county.

Mr. Darnton, of Babraham, during the high price of provisions, instead of advancing the wages of his labourers, allowed them in harvest six lbs. of pork, two lbs. of cheese, four lbs. of rice per man, per week at 4*d.* per lb. each article, this plan proved advantageous to himself, and was well received by the people; the farmers who advanced the wages have found it difficult since to reduce them.

Harvest wages.

At Wisbech, harvest-men are hired every morning at four o'clock on the bridge there, for the day only, or for two days at most. At Burwell, wages and board of a harvest man is estimated at 5*l.* 10*s.* At Chippenham, at 8*l.* 11*s.* thus, wages, 6*l.* 6*s.*; treats, 5*s.*; malt, 1*l.* 10*s.*; carting, firing, 10*s.** Where harvest-men are boarded in the house, the following is their fare, as I learnt from a gentleman at Wimpole.

At six in the morning, one pint of strong beer, and bread and cheese.

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* Where boarded, 2l. to 2l. 10s.

At eight, breakfast of cold meat and beer.

At eleven, one pint of strong beer, and bread and cheese.

At one, dinner; one day roast beef or mutton, (pork will not do) and plain pudding, next day boiled beef or mutton, and plum-pudding.

At four, one pint of strong beer, and bread and cheese.

At seven, hot hash or hot mutton-pies.

On Saturday night an addition of good seed-cake of one lb. covered with sugar, and a quart of strong beer poured over it. Hence each man has daily,

Nine pints of beer (strong);

Three times bread and cheese;

Three times meat;

And on Saturday night, in addition one quart of beer, and a sugared cake. The expense of these will be found great, at the present prices of the several articles.

Haulming Stubbles.

Before Michaelmas 2*s*.; after, 1*s*. 2*d*. to 1*s*. 6*d*. per acre.

The farmers not only complain of the rapid advance of wages, but of the difficulty of procuring steady and deserving labourers; they are much less industrious and respectable than in many counties. In the fens it is easily accounted for, they never see the inside of a church, or any one on a Sunday, but the alehouse society, or that of their neighbours met together to drink away the day. Upon asking my way (towards the evening), in the fens, I was directed, with this observation from the man who informed me; "are you not *afraid to go* past the bankers at work yonder, Sir?" I was told these bankers were little better than savages; they gave me, however, civil answers.

SECT. II.—PROVISIONS.

Beef, 8*d.* to 9*d.* Veal, 7½*d.* to 8*d.* Mutton, 7*d.* to 8*d.* Pork, 5*d.* to 6*d.* Cheese, 4*d.* to 7*d.* Butter, 1*s.* to 1*s.* 4*d* per pound. N.B. The butter rolled up in pieces of a yard long, and about two inches in circumference.

SECT. III.—FUEL.

Coals, 40*s.* per chaldron ; turf, 7*s.*per thousand ; sedge, 9*s.* to 12*s.* per hundred ; at Cambridge all fuel except coals rapidly advancing ; cow-dung dried is used as firing for dairy purposes and by the poor ; it is spread on grass, (common or waste-land) about one inch and a half thick, and cut into pieces about eight to twelve inches square, and lies till dry.

CHAP. XV.

POLITICAL ECONOMY.

SECT. I.—ROADS.

EXCEPTING the turnpikes, the roads in this county are miserably bad, owing to the scarcity and dearness of materials. Most roads running through the fens, are frequently almost impassable, even the turnpike one from Downham to Wisbech, not excepted; the "mending," being only the silt, viz. a sand formerly left by the sea, and not a stone amongst it. The turnpikes in the high-land parts of the county are excellent, as is that from Cambridge through Chatteris, March, &c.

SECT. II.—CANALS.

THE fens in this county are intersected in all directions, by cuts for the conveniency of districts and individuals; the last made was from Wisbech to the river Nene at Outwell, and thence to the river Ouse at Salter's Lode sluice, opening a communication with Norfolk, Suffolk, &c. &c. It was opened in 1797, and has been of great service in draining its neighbourhood, as well as having benefited the town of Wisbech, and the adjacent country, considerably, by the increase of trade.

SECT. III.—FAIRS AND MARKETS.

The fair of greatest note is Stirbich, beginning September 18th, and lasting a fortnight; it is held for the sale of all sorts of shop goods, and for cheese, butter, hops, and horses; it has been declining for many years. There are also fairs held at Cambridge, Ely, Wisbech, Soham, Caxton, Linton, Reach, and Whittlesea. At *every parish* is annually a "feast," viz. a meeting of the lower classes for the purposes of merriment, &c. &c.

There are weekly markets at Cambridge, Ely, Caxton, Soham, Newmarket, Linton, Mepal, and Wisbech.

SECT. IV.—COMMERCE.

None peculiar to this county; a large corn, flour, coal, and deal trade, is carried on in many parts of the county, by means of the rivers and canals communicating with them from Lynn, Wisbech, &c.

SECT. V.—MANUFACTURES.

Ely has a pottery for coarse ware; excellent white bricks are also made there, and at Chatteris, and Cambridge. Lime is burnt at Wisbech, Mepal, Cherryhinton, &c. &c. but that in greatest estimation is burnt at Reach (a hamlet of Burwell), and is fetched many miles. Land, which at Reach would let for farming purposes, at about 15*s.* per acre, will sell for sixty, to eighty, and ninety pounds; and even more, for burning lime. The expense of burning lime is 4*s.* for 100 bushels; ten bushels of coals will burn a chaldron of lime, viz. forty bushels. Price of lime 6*d.* per bushel at pit. Price of clunch, of which the lime is burnt, 2*s.* 6*d.* per chaldron, delivered to boat; there is a great demand for it, and it is sent to great distances.

SECT. VI.—POOR.

NOTHING singular in the management of the poor, their dwellings in general bad. No hundred-houses as in Norfolk and Suffolk. The poor resident in the fens reside in miserable huts. At Weston-Colville, enclosed some years since, the poor were much benefited by having land attached to their cottages; this has been done under many late enclosing acts with similar advantages. Mr. A. Young took the following note at Chatteris. "Mr. Scott, of Chatteris, gives one account upon the subject of the poor, which is very interesting. Till within six or seven years they were permitted to build houses upon the waste; and erected great numbers, taking only the ground the cottage stood on; but the commoners complaining they were stopped from doing it, and since have not been able to procure a dwelling without purchasing a bit of land for that purpose. The ease of doing it before, was a great encouragement to industry and good morals, for a young couple who intended marrying were frugal and saving, in order to have money enough to provide their habitation. Some of these did not cost more than from 7*l.* to 8*l.* to 10*l.* and 15*l.* They used to be in a comfortable state till the last scarcities, but since much distressed, and the class just above, who will not take from the rates, are now perhaps the most distressed of all. What are we to say to the striking fact, that the possession of a mere miserable cottage built for 8*l.* or 10*l.* without garden, and without live stock, keeping the proprietor from the parish. Is it possible that such a fact can be contemplated without amazement at that voluntary blindness to so palpable a mean of lessening if not doing away poor-rates altogether? There is magic, an enchantment in property, even of this curtailed and wretched nature, that works wonders in no other way to be effected. If a poor cottage will do this, what would not a good garden effect? What would not a cow in addition produce? Annals, v. 36, p. 548. Lord Hardwicke has encouraged his poor to make the most of their gardens by giving a premium to the best manager of them. Mr. Custance, of Cambridge, adopts a plan (where he has authority), which does him honour; Mr. A. Young thus speaks of it. "Mr. Custance, of Cambridge, who has the management of Mr. Vernon's estate in Suffolk, has laid four acres and a half of land to each cottage; and taken the inhabitants from being tenants to the farmers to be tenants to the landlord. They pay 2*l.* 2*s.* for the house, and the same rent for land as the farmers. One paid the farmer 5*l.* rent for his house, and an acre of meadow; this man had three acres and a half more let to him, and his rent 4*l.* 14*s.* 6*d.* They were all much delighted, and had no doubt of now doing well. Some almost cried for joy. Mr. Custance also requires the farmers to plant from one to three acres of potatoes, according to the size of their farms, and sell them to the poor. The farmers threaten to rate them to the poor, this has been done at

Kingston in Cambridgeshire, a cottager pays 5*l.* rent for half an acre of meadow, and he is rated at 4*l.* and has paid 20*s.* to the poor. This is abominable." (Annals, v. 36, p. 608.

Mr. Tharp, of Chippenham, allows his mill (a water-mill) to grind one day in the week for the poor at 1*s.* 6*d.* per Co. taking no toll. The poor as well as the farmers complain of public houses being attached to brew-houses; they say those which are independent of brewers, sell much better, more wholesome, and cheaper beer than those belonging to brewers.

SECT. VII.—STATISTICAL DIVISION OF THE PRODUCE OF LAND.

Mr. A. Young, in his Chapter on this subject in his "Suffolk Report," observes that he inserted it as an attempt which may in time be ameliorated in more able hands; as *mine* are not those hands, I must decline a similar attempt; indeed the accuracy of Mr. Young's calculations under this head may be suspected, (he himself observes they are very far from perfection), as the result of them is such as proves farming so beggarly an employ (except on a *very large scale*) that no man with two ideas in his head and a hundred pounds in his pocket would engage in it; and that these estimates are very far from the truth, may be taken for granted from the apparent, and, it is to be hoped, real, situation of the farmers in the kingdom, and above all from the impossibility of their living, reaping such profits only.* Till accounts absolutely accurate, be produced, and those from various respectable quarters, every communication of this nature must be defective in so great a degree, as to be of little individual or national utility.

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* Viz. 5 per cent. profit, on £5. capital per acre.

SECT. VIII.—POPULATION.

THAT of this county appears, by communication to the Board of Agriculture, (1801) to be 83,000, and as the number of acres is estimated at 443,300, it is five acres and three-tenths to each person. (Annals, v. 36, p. 74).

An estimate returned to government in 1804, makes the population of this county in 1700, 76,000; in 1750, 72,000; in 1801, 92,300, (Annals, v 42, p. 267). Mr. Vancouver writes that from the information he collected, the population of this county is 83,000, which he says is greatly short of former calculations, which have stated it at 140,000. The general opinion is that the population (particularly in the fens) has greatly increased of late years.

CHAP. XVI.

OBSTACLES TO IMPROVEMENT.

IN the uplands, the expense of enclosures.
In the fens, clashing interests.

CHAP. XVII.

MISCELLANEOUS OBSERVATIONS.

SECT. I.—AGRICULTURAL SOCIETIES.

Not one in the county.

SECT. II.—WEIGHTS AND MEASURES.

The stone is 14 lbs.
Wool is sold by tod, of 28 lbs.
Cheese, by cwt. of 120 lbs.
Corn, by coomb, or by load of five bushels.
Oats of fen, by last of 21 coomb.

SECT. III.—BLACKSMITH.

The prices in 1790 and 1804, for blacksmith's work in this county, were returned to the Board of Agriculture, as under;

		1790.	1804.
Tire per lb.	average of the returns.	4*d*¼.	5*d*¼.
Plough-irons, per lb.		4*d*½.	6*d*½.
Chains per lb.		5*d*.	7*d*.
Shoeing per Shoe		4½*d*.	6½*d*.

I received the following information in 1806 and 1807.
At Connington, wheel-tire, 6*s.* 6*d.* per score, or 4*d.* per lb.
At Mepal, ditto .... 6*d.*
At Upwell, ditto .... 6*d.*
At Chatteris, ditto .... 4½*d.*
At Connington, plough-work .... 6*d.*
At Chatteris, ditto .... 6*d.*

At Connington heavy chains 1*s.* 3*d.* per yard, light chains, 1*s.* per yard.
At Mepal, all chains .... 8*d.* per lb.
At Chatteris, ditto .... 6*d.*
At Connington, shoeing per shoe .... 6*d.*
At Mepal, ditto .... 6*d.*
At Upwell, ditto .... 7½*d.*
At Chatteris, ditto .... 6*d.*
Similar prices exist in most parts of the county.

SECT. IV.—CARPENTER.

RETURNED to the Board of Agriculture as the prices in 1790 and 1804, as follows; by day a man in 1790, average of returns, 1*s.* 9½*d.*; in 1804, 2*s.* 8*d.*

The average of the returns I received in 1806 and 1807, is, per day, for a carpenter 3*s.* and beer, or 2*d.* in 1*s.* in lieu of it.

SECT. V.—COLLAR-MAKER.

RETURNED to the Board of Agriculture, as the prices in 1790

1790 and 1804, as follows; a man per day, in 1790, average of returns 2*s.*; in 1804, 3*s.*

The average of the returns I received in 1806 and 1807, is 3*s.* 6*d.* and *board.*

SECT. VI.—MASON.

RETURNED to the Board of Agriculture, as the prices in 1790 and 1804, as follows; a man per day, in 1790, average of returns, 2*s.*; in 1804, 3*s.*

The average of accounts I received in 1806 and 1807, is 4*s.* 6*d.* per day for mason and slab, and beer or 2*d.* in 1*s*, in lieu of it.

SECT. VII.—THATCHER.

RETURNED to the Board of Agriculture, as the prices in 1790 and 1804, as follows; a man per day in 1790, average of returns, 2*s.*; in 1804, 3*s.*

The average of the accounts I received in 1806 and 1807, is 3*s.* 1*d.* per day for a man.

SECT. VIII.—WEIGHT OF CORN.

FIELD corn is heavier than fen-corn one stone and a half to two stone (of 14 lbs). Weight of fen-corn at Thorney, oats, nine stone; barley, fourteen stone: wheat, sixteen stone, per Co. Hence the weight of field corn is (taking the difference at two stone per Co.) oats, eleven stone; barley, sixteen stone; wheat, eighteen stone; from which it may be suspected that the fen corn is over-rated in weight.

SECT. IX.—WATER.

At Soham very bad; at Tid St. Giles so bad that in 1803 many persons as well as cattle died from drinking it.

SECT. X.—WEEDS.

Weeds abound in the fens, and indeed in upland arable fields, notwithstanding the boasted fallow system. The most weed in fens, (if I may be allowed by the Cambridgeshire farmer so to call it) is couch grass, esteemed by farmers of the old school of as much value as ray-grass; it is not unusual to have fields so full of it, as to have the surface *matted* together so that it would "fork," as it is termed, viz. might be loaded by the fork. All weeds in fens, on mowing lands, wastes, roads, banks, &c. &c. are suffered to seed, and may be seen on a windy day, flying in clouds to a great distance.

SECT. XI.—FENCES.

THOSE on the new enclosure, (and which have been described, when speaking of enclosures), promise to be excellent.

The wall fences about pastures near home, and about yards, &c. are made of clunch, and cost 9*s.* 6*d.* per running rod four feet high.

The quick fences round March, &c. &c. and on lands bordering upon the fens are excellent, they are set on the ground and little or no ditch against them, being guarded by dead fence till they can protect themselves; the method of doing this is expensive, and in a country where firing is scarce, would be too great a temptation to those in want of and unable to purchase it.

Professor Harwood, of Bartlow, excels in the management of old fences, he *lays* and *clips* them; they are beautiful and *hogproof.*

SECT. XII.—DEER.

THERE are deer in Wimpole park which are subject to a disorder similar to that to which Mr. Vancouver relates the sheep in many parts of the county are subject; he describes it, thus: "The first symptom of the disorder observable in the deer, is similar to that amongst the sheep; which is an apparent uneasiness in the head, and the rubbing of its horns against the trees, (this action however is common to deer, in particular seasons in all countries, whether in a perfectly wild, or more domesticated state) but the most extraordinary effect of this disease is, that the animal appears to labour under a sort of madness, in pursuing the herd which now flee before him, and endeavour to forsake him ; trying to bite or otherwise annoy them with all his strength and power, which soon being exhausted, he becomes sequestered from the rest of the herd ; and in that deplorable state of the disease, breaks his antlers against the trees, gnaws large collops of flesh from off his sides and hind quarters, appears convulsed for a short time, and soon expires."

THE END.

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